The State Plan for Arthritis Action 2006-2010

South Carolina Arthritis Prevention and Control Program
South Carolina Department of Health and Environmental Control
Mills Jarrett Complex
Box 101106
Columbia, SC 29211
(803) 898-0760

www.scdhec.gov/arthritis

Acknowledgements

The State Plan for Arthritis Action in South Carolina, 2006-2010 is the second five-year plan to address the burden of arthritis and other rheumatic conditions in South Carolina. This report is a collaborative effort of the South Carolina Arthritis Prevention and Control Program staff and Advisory Council, with support from the Arthritis Foundation Carolinas Chapter.

We gratefully acknowledge *Patsy Myers, DrPH, RD, MS*, Chairperson of the Advisory Council state plan workgroup, for her leadership throughout all phases of this project and for her expert contributions.

We express sincere appreciation to the dedicated members of the Advisory Council state plan workgroup for their expertise and many hours of work in preparing, writing, and editing this report:

Jennifer Chiprich, PhD, MPH
Cheryl Dye, PhD, CHES
Cora Plass, ACSW, LISW
Gwendolyn Prestidge, ACSW, LISW
Patricia Sharpe, PhD, MPH
Patricia Wolman, EdD, RD

We also extend appreciation to the members of the full Advisory Council for their suggestions and comments.

We wish to acknowledge the *Arthritis Foundation Carolinas Chapter* for its ongoing support and collaboration toward reducing the burden of arthritis in South Carolina.

We wish to recognize *Michael Byrd, PhD, MPH, MSW*, Director of the Bureau of Community Health and Chronic Disease Prevention, for his support of the program as a vital contribution to the public health of South Carolina.

At the national level, we wish to acknowledge the *Centers for Disease Control and Prevention* for funding for the S.C. Arthritis Program and for their ongoing support, guidance, and leadership and the *Association for State and Territorial Chronic Disease Directors* for their leadership and guidance.

Executive Summary

Arthritis refers to the more than 100 different rheumatic diseases and conditions that affect the joints, connective tissues, or supporting structures of the body. Arthritis is among our nation's most common and serious public health problems, affecting nearly 43 million Americans and limiting the activities of more than 16 million adults. It is the leading cause of disability in the United States and causes pain, suffering, and reduced quality of life for those who have it. In addition to the human cost, the impact on the health care system is enormous. Arthritis and other rheumatic conditions cost $86 million in medical expenses and lost productivity and result in 750,000 hospitalizations and 44 million outpatient visits each year.

With the aging population in the United States, arthritis is expected to increase in the coming decades. If current trends continue, by the year 2030, an estimated one-quarter of the adult population, or nearly 65 million adults, will have arthritis. To meet this public health challenge, the Centers for Disease Control and Prevention (CDC), the Arthritis Foundation, and the Association of State and Territorial Health Officials, with input from numerous other organizations, launched the National Plan for Arthritis Action in 1999. The plan led to the inclusion of arthritis objectives in Healthy People 2010, the health objectives for the nation, and to the development of state programs to address arthritis at the state and local levels.

Since its formation in 1999, The South Carolina Arthritis Prevention and Control Program has been working with the Arthritis Foundation and other partners to address arthritis in South Carolina. South Carolina has the ninth highest prevalence rate for arthritis in the nation, with arthritis and other rheumatic conditions affecting 30 percent, or nearly one third, of the adult population.

Executive Summary

The first *State Plan for Arthritis Action in South Carolina 2000 – 2005* laid the foundation for a statewide, population-based approach to reduce the burden of arthritis in the state. We have made progress by increasing awareness, developing partnerships, promoting prevention and early detection, and expanding self-management programs. However, there is still much work before us to impact this serious public health problem.

It is time to look ahead and plan for the next five years through the development and publication of the *South Carolina State Plan for Arthritis Action 2005 – 2010*. The State Plan follows the framework of the *National Plan for Arthritis Action* and provides a blueprint for a statewide approach to address arthritis during the next five years.

Responsibility for carrying out this plan belongs to the many organizations and individuals throughout the state who are working collaboratively to reduce the burden of arthritis in South Carolina. Together we can meet this public health challenge and make the State Plan a reality.

S.C. ARTHRITIS PREVENTION AND CONTROL PROGRAM ADVISORY COUNCIL MEMBERS

Phyllis Allen
Director of Nutrition
SC DHEC
1751 Calhoun Street
Columbia, SC 29201
(803) 898–0809
Fax (803) 898–0557
allenpa@scdhec.sc.gov

Jettiva Belton
Silvered Haired Legislature
4717 Brenthaven Road
Columbia, SC 29206
(803) 782-9168
JettBSmart@hotmail.com

Jennifer Chiprich, PhD
Epidemiologist
SC DHEC
Office of Public Health Statistics and
Information Services
2600 Bull Street
Columbia, SC 29201
(803) 896-5181
Fax: (803) 896-5182
chiprij@dhec.sc.gov

Ronald Collins, MD
Rheumatologist
Columbia Arthritis Center
1711 St. Julian Place
Columbia, SC 29201
(803) 779-0911
RLC843@Hotmail.com

Linda Danielson, RN
Lt. Governor's Office on Aging
1301 Gervais Street, Suite 200
Columbia, SC 29201
(803) 734-9889
danielse@aging.sc.gov

Cheryl Dye, PhD, CHES
Clemson University
Public Health Sciences
531 Edwards Hall
Clemson, SC 29634
(864) 656-4442
TCHERYL@clemson.edu

Luevenia Bluefort
Wellspring Resource Center
Fibromyalgia Support Group Member
1405 Cherokee St.
Columbia, SC 29201
(803)779-9468

Lynda Christison, MPA
Lexington County Recreation & Aging Commission
125 Parker Street
Lexington, SC 29272
(803) 356-5111
lchristison@lcrac.com

Laurie Culpepper, OTR/L
Supervisor
Hand and Upper Extremity Rehabilitation
St. Francis Health System
1 St. Francis Drive
Greenville, SC 29601
(864) 255-1653
(864) 675-4650
Fax: (864) 255-1561
lshehan@stfrancishealth.org

Leigh Dixon, RN
Community Health Nurse
Dorn VA Medical Center
6439 Garners Ferry Road
Columbia, SC 29209
(803) 776-4000 ex. 6842
leigh.Dixon@med.va.gov

S.C. ARTHRITIS PREVENTION AND CONTROL PROGRAM ADVISORY COUNCIL MEMBERS

Rebekah Graber, RPT
Director of Physical Therapy
Chief PT CM Tucker Nursing Care Center
2200 Harden Street
Columbia, SC 29203
(803) 737-5372
Rpg08@dmh.state.sc.us

Davis Hook, RPH
Registered Pharmacist
Hawthorne Pharmacy
2827 Hebron Drive
West Columbia, SC 29169
(803) 256-3440, Ext. 102
Fax: (803) 791-7142
dhookjr@sc.rr.com

Jayson Lawson
Arthritis and Pain Specialty- Pfizer
124 Highcrest Lane
Lexington, SC 29072
(803) 582-9130
Jason.c.Lawson@pfizer.com

Patsy Myers, DrPH
Epidemiologist
SC DHEC
Bureau of Community Health and Chronic Disease Prevention
1777 St. Julian Place
Columbia, SC 29201
(803) 545-4533
Fax: (803) 545-4921
myerspm@dhec.sc.gov

Gail Norman, President &CEO
Arthritis Foundation Carolinas Chapter
200 East Woodlawn Road
Suite 156
Charlotte, NC 28217
(704) 529-5064 Ex - 103
(800) 883-8806 (toll free)
Fax: (704) 529-0626
gnorman@arthritis.org

Pat Harrison
Disability Action Centers, Inc.
1115 Bellview Ave.
Columbia, SC 29201
(803) 731-3801
handsnthings@aol.com

Freda King, MS
Client Services Consultant
SC Vocational Rehabilitation
P. O. Box 15
West Columbia, SC 29171-0015
(803) 896–6580
Fax: (803) 896-6510
Aking@scvrd.state.sc.us

Margo McKee
Primary Care Association
2211 Alpine Road Extension
Columbia, SC 29223
(803)788-2778
margam@scphca.org

Gary Nestler
Director of Complimentary
Medicine and Acupuncture
Office of Complimentary Medicine
Home: 26 Barre Street
Charleston, SC 29401
(843) 478-0997
nestlerg@comcast.net

Cora Plass, ACSW, LISW
Director, Healthy Aging
SC DHEC
Bureau of Community Health and Chronic Disease Prevention
1751 Calhoun Street
Columbia, SC 29201
(803) 898-0349
Fax: (803) 898-0350
plasscf@dhec.sc.gov

S.C. ARTHRITIS PREVENTION AND CONTROL PROGRAM ADVISORY COUNCIL MEMBERS

Gwendolyn Prestidge, ACSW, LISW
Arthritis Program Coordinator
SC DHEC
Bureau of Community Health and
Chronic Disease Prevention
1751 Calhoun Street
Columbia, SC 29201
(803) 898-9578
Fax: (803) 898-0350
prestigf@dhec.sc.gov

Tina Shadley, OTR/L
Therapy Coordinator, Home Health
Services
SC DHEC
Bureau of Community Health and
Chronic Disease Prevention
1751 Calhoun Street
Columbia, SC 29201
(803) 898-0561
shadlecm@dhec.sc.gov

Carrie Sinkler-Parker, MPH
Associate State Director
AARP
1201 Main Street
Columbia, SC 29201
(803) 765-7370
cell: (803) 238-7831
csinkler@aarp.org

Dr. H. Del Schutte, MD
MUSC Dept. for Orthopedic Surgery
171 Ashley Avenue
Charleston, SC 29425
(843) 792-4368
schutted@musc.edu

Patricia A. Sharpe, PhD, MPH
Prevention Research Center
School of Public Health
University of South Carolina
730 Devine Street
Columbia, SC 29208
(803) 777-4259
pasharpe@sc.edu

Harriett Williams, PhD
Office of the Associate Dean of Academic Affairs
University of South Carolina
Norman J. Arnold School of Public Health
Columbia, SC 29208
(803) 777-7932
hwilliam@gwm.sc.edu

Patricia Wolman, EdD, RD
Department of Human Nutrition
Winthrop University
302 Life Sciences Building
Rock Hill, SC 29733
(803) 323-4520
wolmanp@winthrop.edu

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List of Abbreviations

AA	Arachidonic Acid
AFAP	Arthritis Foundation Aquatic Program
AOA	Administration on Aging
ASHC	Arthritis Self-Help Course
BRFSS	Behavioral Risk Factor Surveillance System
BUOA	Bone-Up on Arthritis program
CAM	Complementary and Alternative Medicine
CDC	Centers for Disease Control and Prevention
CHCHP	Bureau of Community Health and Chronic Disease Prevention
CJS	Chronic Joint Symptoms
DHEC	Department of Health and Environmental Control
EPA	Eicosopentaenoic Acid
ER	Emergency Room
FMS	Fibromyalgia Syndrome
FSHC	Fibromyalgia Self-Help Course
GLA	GAMMA-Linolenic Acid
MMWR	Morbidity and Mortality Weekly Report
MUSC	Medical University of South Carolina
NAAP	National Arthritis Action Plan, developed by CDC
	Arthritis Program and the National Arthritis Foundation
NAF	National Arthritis Foundation
NHIS	National Health Interview Survey

List of Abbreviations

OA	Osteoarthritis
PA	Physical Activity
PACE	People with Arthritis Can Exercise
PEARL	Propriety Economic Feasibility Acceptability Resources Legality
PRC	Prevention Research Center
RA	Rheumatoid Arthritis
SAME	S-adenosymethionine
S.C.	South Carolina
SES	Socioeconomic Status
SHAM TENS	Transcutaneous Electrical Stimulation without Current
SLE	Systemic Lupus Erythematosus
SLESH	Systemic Lupus Erythematosus Self-Help Course
SMART	Self-Management Arthritis Treatment
SMDP	Sustainable Management Development Program
SMI	Self-management Interventions
TENS	Transcutaneous Electrical Stimulations
U.S.	United States

Introduction

The South Carolina Arthritis Prevention and Control Program (hereinafter referred to as the S.C. Arthritis Program) is one of 36 state health programs funded by the Centers for Disease Control and Prevention to address arthritis through a statewide, population-based approach. Prior to 1999 when South Carolina's program was formed, there was no coordinated statewide effort to address arthritis. The program joined with the Arthritis Foundation and other partners across the state to design a public health response to reduce the burden of arthritis. One of the first tasks of the program was to develop a steering committee of representatives from numerous state and private organizations and consumers to guide the program. Through the steering committee's efforts, *The State Plan for Arthritis Action in South Carolina, 2000 – 2005* was written and published to provide a plan of action for the first five years of the program.

In May 2002, the steering committee was transitioned into the S.C. Arthritis Prevention and Control Program Advisory Council (hereinafter referred to as the S.C. Arthritis Advisory Council) to provide ongoing direction and guidance to the program toward the goal of reducing the burden of arthritis in South Carolina. Meetings are held biannually, with work groups carrying out activities throughout the year.

Development and Dissemination of the Plan

The state plan workgroup is responsible for drafting the *State Plan for Arthritis Action, 2005 – 2010*, with input from and approval of the full Advisory Council. This five-year plan establishes osteoarthritis, rheumatoid arthritis, lupus, and fibromyalgia as the four top priorities and emphasizes the following strategic approaches to accomplish the goals detailed in the *Plan of Action* section of the report:

Surveillance and epidemiology, using scientific tools for the collection, analysis, interpretation, and dissemination of data for program planning, implementation, and evaluation; identifying gaps in knowledge and ways to address them; and practical application of data.

Health Communication, increasing arthritis awareness through printed materials, the media, Web site, targeted campaigns, presentations, educational forums, health fairs and other events.

Programs, implementing effective interventions and supportive services for people with arthritis to enhance quality of life.

Policies and Systems, creating an infrastructure through partnership building; and advocating for legislation, policies, guidelines, practices, and funding to prevent and control arthritis.

The S.C. Arthritis Advisory Council and the S.C. Department of Health and Environmental Control (DHEC) program staff will be responsible for distributing the plan to Arthritis Program partners and others who are interested in addressing arthritis in S.C. Some of the organizations targeted for distribution are the S.C. Arthritis Advisory Council and other key partners; the Arthritis Foundation Carolina's Chapter Board; rheumatologists, orthopedists and other physicians; health care providers and health insurers; state agencies; legislators; research centers; universities; consumer groups; and faith-based organizations.

Definition of Arthritis

The term ***arthritis*** refers to the more than 100 different rheumatic diseases and conditions that affect the joints, connective tissues, or supporting structures of the body. These conditions frequently lead to limitations in work, recreation, and usual activities, including basic self-care. Some types of arthritis can affect vital organs and result in life-threatening complications. Arthritis affects both men and women and people of all racial groups and ages, including children.

For the purpose of this five-year state plan, four types of arthritis will be discussed and targeted for action.

Osteoarthritis (OA), or "degenerative joint disease," causes the cartilage and bones in the body to degenerate. It most often affects the hip, knee, foot, and hand, but can affect other joints as well. Degeneration of joint cartilage and changes in underlying bone and supporting tissues lead to pain, stiffness, movement problems, and activity limitations. According to the Arthritis Foundation, OA affects more than 20 million Americans. More than one half of those 65 and older have this disease. Before age 45, the disease is more common in men than women, but after age 45, it is more common in women (NIAMS).

Rheumatoid arthritis (RA) is characterized by chronic inflammation of the joint lining. Symptoms include pain, stiffness, and swelling of multiple joints. The inflammation may extend to other joint tissues and cause bone and cartilage erosion, joint deformities, movement problems, and activity limitations. Rheumatoid arthritis can also affect connective tissue and blood vessels throughout the body, triggering inflammation in a variety of organs, including the lungs and heart, and increasing a person's risk of dying of respiratory and infectious diseases. Nationally, 2.1 million people have RA, and it is two to three times more common in women than in men (NIAMS).

Fibromyalgia is a pain syndrome, disproportionately affecting more women than men, involving muscle and muscle attachment areas. Common symptoms include widespread pain throughout the muscles of the body, sleep disorders, fatigue, headaches, and irritable bowel syndrome. Very little is known or understood about the etiology of this disease. Diagnosis is difficult, and once made, the condition is very hard to treat. Anecdotal reports show that patients who can afford it have often sought complementary medicine treatments, such as massage therapy and acupuncture, for relief from their pain and disability. Nationally, fibromyalgia affects from 3-6 million people or about 1 in 50. Eighty to 90 percent of diagnosed cases are women (NIAMS).

Lupus is a chronic, autoimmune disease. The body's immune system, which normally provides a protective function, mistakes its own cells and tissues for foreign substances and attacks them, resulting in pain, inflammation, and damage to tissues. The cause of lupus is unknown. Scientists believe that a combination of genetic, environmental, and possibly hormonal factors play a role. While lupus can affect any part of the body, symptoms are generally located in only a few organs. Commonly affected areas include the joints, kidneys, heart, lungs, brain, blood, and skin. Symptoms that are most common are achy or swollen joints, unexplained fever, skin rashes, prolonged fatigue, and anemia. Lupus can range from mild to life-threatening. There are several forms of Lupus, including:

Systemic lupus erythematosus (SLE) - Approximately 70 percent of people with lupus have this form, the most common and serious form of the disease. In about half of the cases, a major organ is affected.

Discoid lupus - This form of the disease is limited to the skin and identified by a rash that may appear on the face, neck, and scalp.

Drug induced lupus - This form occurs after the use of certain prescribed drugs. Symptoms usually disappear when the medication that caused the symptoms is stopped.

The Lupus Foundation estimates that approximately 1.5 million Americans have some form of lupus. The condition generally develops between the ages of 15 and 44 and occurs 10 to 15 times more frequently among women than men. It is two to three times more common among African Americans, Hispanics, Asians, and Native Americans.

Arthritis Myths

Myth: Arthritis is an old person's disease.

Fact: Although arthritis affects more than half of people 65 years of age and older, most people with arthritis, nearly three out of five, are younger than age 65. People of all ages are affected, including children and teens. Juvenile rheumatoid arthritis is one of the most common chronic illnesses of childhood.

Myth: Arthritis is just a normal part of aging.

Fact: If this were true, most older adults and no children would have arthritis. However, nearly half of the elderly population never experience these conditions, and an estimated 285,000 children are affected (CDC, unpublished data). Furthermore, some forms of arthritis (e.g., osteoarthritis of the knee) can be prevented.

Myth: There is no cure for most forms of arthritis.

Fact: Although no "magic bullet" for all types of arthritis exists, research shows that early diagnosis and appropriate management can help reduce the consequences associated with many types of arthritis. Medication, education, physical activity, and surgery are four effective treatment strategies that can make a difference. One intervention in particular, the Arthritis Foundation Self-Help Program, has been shown to reduce pain by 20 percent and physician visits by 40 percent.

Myth: Arthritis isn't a serious condition and does not have the financial impact of a disease like cancer. It's just some aches and pains. It's best to ignore it.

Fact: 43 million Americans live with some form of arthritis. The annual cost to our society for medical care and lost wages resulting from arthritis is estimated to be $65 billion. It is the number one cause of disability in the U.S. If left undiagnosed and untreated, it can become a serious health problem.

Myth: My doctor said, "You have arthritis." Since that is his diagnosis, I guess I have arthritis and will get worse soon.

Fact: Those words, "You have arthritis," is NOT a diagnosis. Ask for a specific diagnosis. There are more than 100 types of arthritis. Getting the right treatment requires getting the correct diagnosis.

Myth: "My mother and father had arthritis, so I'll probably have it too."

Fact: "While researchers suspect that some forms of arthritis have inherited links, that does not necessarily mean you will develop it. There are other things that can lead to someone having arthritis. The cause of many forms of arthritis are not fully understood. (Arthritis Foundation Web site, "Questions and Answers").

Myth: The most common type of arthritis is rheumatoid arthritis (RA).

Fact: The most common type is osteoarthritis (OA). More than 20 million people have OA; 2.1 million people have RA.

Myth: Intensive physical activity will bring about a tendency for one to have arthritis in later life.

Fact: The very opposite may be true. "Research shows that proper exercise reduces pain and improves function. Some exercises maintain range of motion and joint flexibility while others strengthen muscles that support the joints. "Low impact exercise, such as swimming, walking or biking builds strength and helps maintain overall fitness and reduce or maintain weight" (Ben-Ari, 2002).

Myth: Weight is not a factor in causing arthritis.

Fact: Excess weight can lead to OA of the hip or knee. Obesity speeds up the rate of damage. Weight control is important.

Myth: "Take it easy" if you have OA to reduce pain and loss of function of joints.

Fact: The first symptoms of OA are a signal for a regular dedicated exercise program to increase heart, muscle, ligament, and bone strength.

Myth: A family doctor is all you need to treat your arthritis.

Fact: A family doctor is only the first step in seeking diagnosis and treatment. He may send you to a rheumatologist, an orthopedist, an occupational or physical therapist, or a clinic for pain management. A team approach is beneficial.

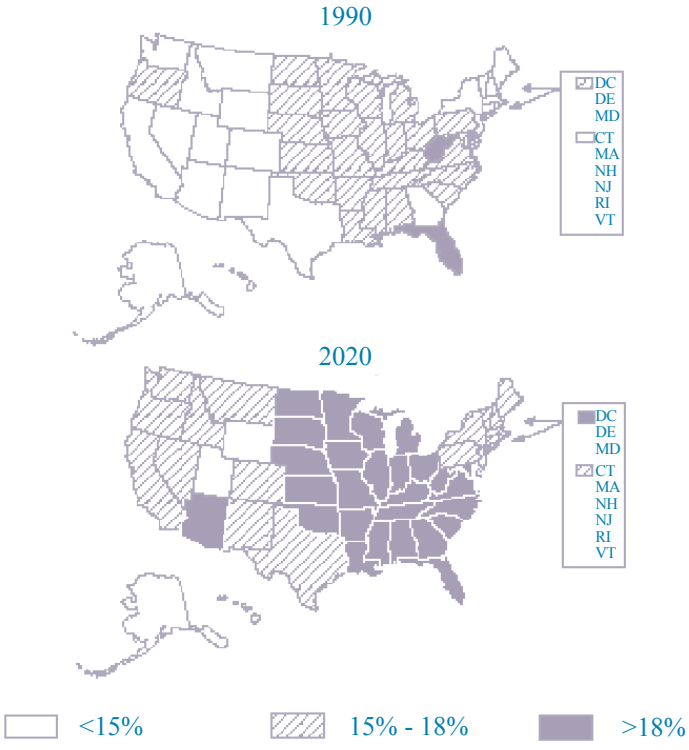
Public Health Impact National Statistics

Arthritis is one of the most prevalent diseases in the United States. Based on 2002 National Health Interview Survey (NHIS) data, nearly 43 million Americans report a doctor told them they have arthritis or another rheumatic condition, and almost another 9 million have chronic joint symptoms that have not been diagnosed as arthritis. Arthritis is the leading cause of disability among U.S. adults. It limits everyday activities for 16 million Americans. By 2020, an estimated 12 million Americans will be limited in daily activities because of arthritis.

With the aging of the U.S. population, the prevalence of arthritis is expected to increase in the coming decades. By the year 2030, an estimated one quarter of the projected total adult population or 64.9 million adults 18 years of age and older will have doctor-diagnosed arthritis, compared to the 42.7 million adults in 2002. (Figure 2) Two-thirds of those with arthritis will be women. These estimates may be conservative, as they do not account for the current trends in obesity.

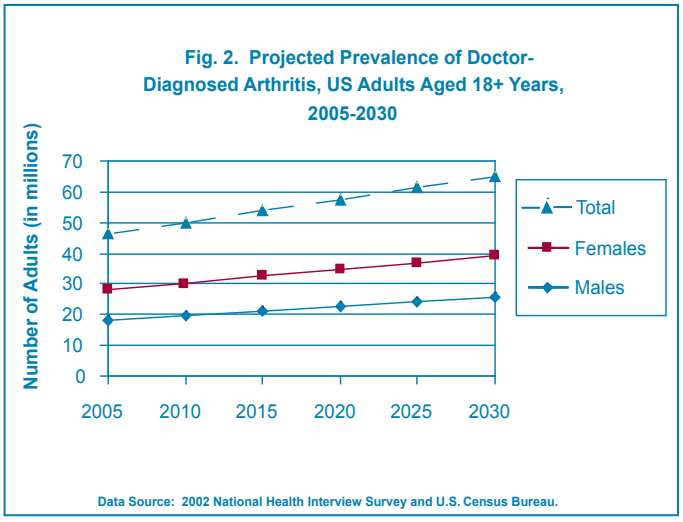
Fig. 1. Estimated Arthritis Prevalence, 1990 and Projected to 2020

Source: Helmick CG, et al. Arthritis Care and Research 1995;8:203–11.



Who has arthritis?

According to the 2002 NHIS, approximately 21 percent of adults in the United States have doctor-diagnosed arthritis. Arthritis diagnosis varies in the population by several demographic factors. Women are significantly more likely to report an arthritis diagnosis or presence of chronic joint symptoms than men. Likewise, there is a significant difference among different age groups, with those over 75 having a prevalence rate of arthritis over six times greater than those 18-44 years of age. Among different ethnicities and races, the prevalence rate of arthritis varies. Those of non-Hispanic ethnic origin, both Black and White, have a higher rate of doctor-diagnosed arthritis than those of Hispanic origin. Native Americans report significantly higher prevalence of arthritis than other racial/ethnic groups. When considered by both race/ethnicity and sex, African American women were the most likely to report an arthritis diagnosis while Hispanic men had the lowest prevalence rate of reporting arthritis.



Among socio-economic indicators, there are similar variances in the prevalence rate of doctor-diagnosed arthritis. With increasing levels of educational attainment, the prevalence of arthritis decreases. Those with less than a college degree are more likely to have a diagnosis of arthritis than those with a bachelor's degree or higher. Additionally, those with a household income greater than $75,000 are significantly less likely to have arthritis than any other income level. Those with an income of less than $20,000 per year are more likely to have an arthritis diagnosis than those over $20,000 per year.

Those living in rural areas had a higher prevalence rate of arthritis than those individuals in urban areas.

Out of those 42.7 million individuals nationwide who report an arthritis diagnosis, 16 million reported limitations in their activities due to arthritis. Additionally, 8.2 million people with arthritis of working age reported work limitations attributable to their arthritis.

Obesity and physical activity are known risk factors for arthritis. Those who are obese are four times more likely to develop knee osteoarthritis than those who are not obese. Nationwide, about 35 percent of the adults with doctor-diagnosed arthritis are obese, compared to 21 percent of those without arthritis. Additionally, those who have arthritis are more likely to be physically inactive than adults without arthritis.

In addition to reported work and activity limitation, those with arthritis report limitations in their ability to stoop, bend, or kneel. Approximately 6 million cannot walk a quarter of a mile. People with arthritis also report having fair or poor health three times more often and report significantly more days of poor physical health, poor mental health, more unhealthy days and recent activity limitation than people without arthritis.

People with arthritis account for 2.4 percent of all hospital discharges and 2.4 percent of days of care in 1997. Women and patients over the age of 65 account for the majority of hospitalizations for arthritis. Likewise, patients with arthritis account for 36 million ambulatory-care visits. Again, women and patients over age 65 account for the majority of these visits. Approximately 4.8 percent of all discharges from home health care can be attributed to arthritis, with most attributed to osteoarthritis.

For further information regarding National Statistics and Hospitalization information, visit the CDC Web site for arthritis:

http://www.cdc.gov/arthritis/index.htm

Costs

Each year, arthritis results in 36 million outpatient visits, 750,000 hospitalizations, estimated medical care costs of $51 billion, and estimated total costs (medical care and lost productivity) of $86 billion.

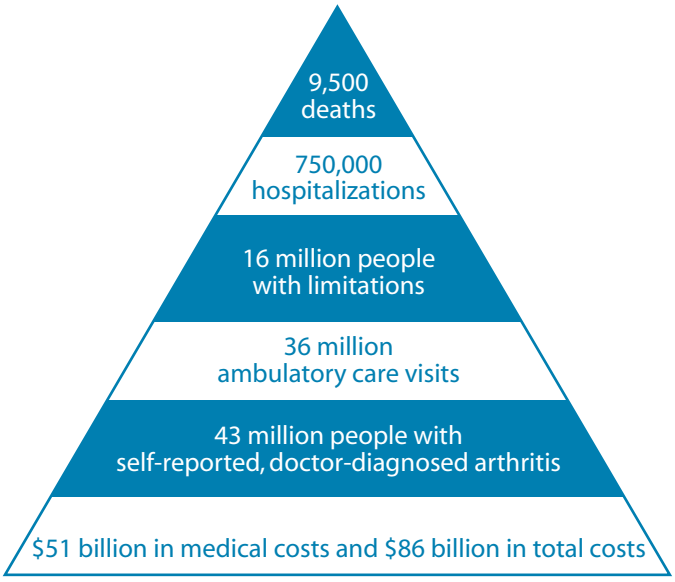


Fig. 3. Arthritis in the United States (Hospitalization and cost data 1997 and Prevalence data NHIS 2002.)

Burden of Arthritis in SC

This section of the State Plan will summarize the prevalence measures for arthritis in South Carolina. For a more complete report on the burden of arthritis in the state, reference the most recent *The Burden of Arthritis in South Carolina* report on DHEC's arthritis Web site:

http://www.scdhec.gov/arthritis

Prevalence Doctor-Diagnosed Arthritis

	Adults with Doctor-Diagnosed Arthritis [1]		Adults with Possible Arthritis [2]	
Characteristic	Percent (3)	95%CI	Percent (4)	95%CI
Total	29.7	28.4-31.0	15.9	14.8-17.0
Age Group				
18-44	13.3	11.8-14.8	18.6	16.7-20.4
45-64	41.7	39.5-43.8	15.3	13.7-16.9
65+	56.9	54.0-59.7	9.3	7.5-11.0
Gender				
Male	25.6	23.7-27.6	18.2	16.4-20.0
Female	33.4	31.7-35.0	13.9	12.6-15.2
Race/Ethnicity				
White, Non-Hisp.	30.4	29.0-31.8	16.9	15.7-18.2
Black, Non-Hisp.	28.2	25.2-31.3	12.6	10.2-14.9
Hispanic	20.7	12.2-29.3	12.1	5.5-18.6
Other	28.8	22.0-35.6	21.6	13.7-29.4
Education				
<= 11	40.9	36.4-45.5	15.9	11.8-20.0
12 or equivalent	31.9	29.5-34.2	14.9	13.0-16.7
=> 13	26.1	24.5-27.6	16.5	15.1-17.9
Obese	38.8	36.0-41.6	16.1	14.0-18.2
No non-occupational Physical Activity (6)	41.2	37.5-44.9	12	9.5-14.4

According to the 2004 SC Behavioral Risk Factor Surveillance System (BRFSS), almost one-half (45.6 percent) of non-institutionalized adults in South Carolina have arthritis or possible arthritis (Table 1). People with arthritis are defined as those having been told by a doctor or other health professional that they have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia, which is the CDC case definition for arthritis. People with chronic joint symptoms (CJS) but no past history of doctor diagnosis of arthritis are defined as having "possible arthritis." Almost one in three adults in South Carolina have been diagnosed with arthritis (30 percent), and more than one in 10 have possible arthritis (15.3 percent).

Arthritis affects both men and women and people of all ages and racial and ethnic groups, but it is more common among certain groups. Arthritis prevalence is significantly higher in women than men and significantly lower in high school graduates and in those with some college, compared with those with less than a high school diploma. Arthritis prevalence is four times higher in the 65 and older age group, and three times higher in the 45-64 age group than in the 18-44 age group.

Prevalence Doctor-Diagnosed Arthritis

Trends in Doctor-Diagnosed Arthritis show that, overall, prevalence is staying fairly stable (fig. 4).

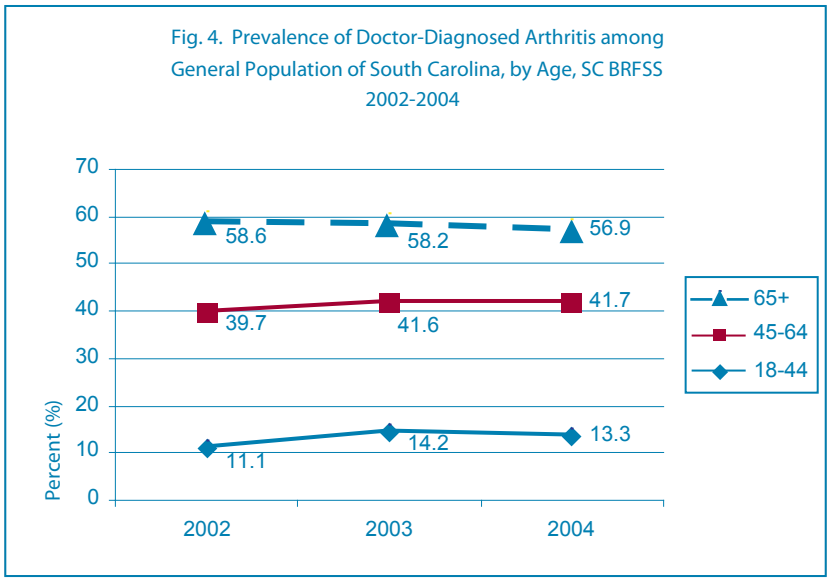
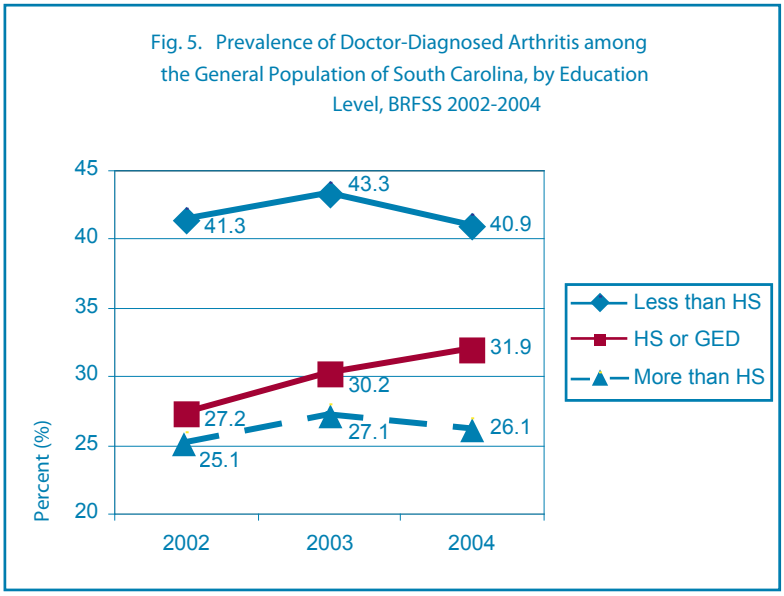


Figure 5 presents the three-year trends by education status. People with less than a high school education have a higher prevalence rate of arthritis than the other education groups.



Prevalence Doctor-Diagnosed Arthritis

Over the past three years, prevalence in females has remained stable, but higher than the prevalence in males (fig. 6). Prevalence in racial groups has remained fairly stable (fig. 7).

Fig. 6. Prevalence of Doctor-Diagnosed Arthritis among the General Population of South Carolina, by Gender, BRFSS 2002-2004

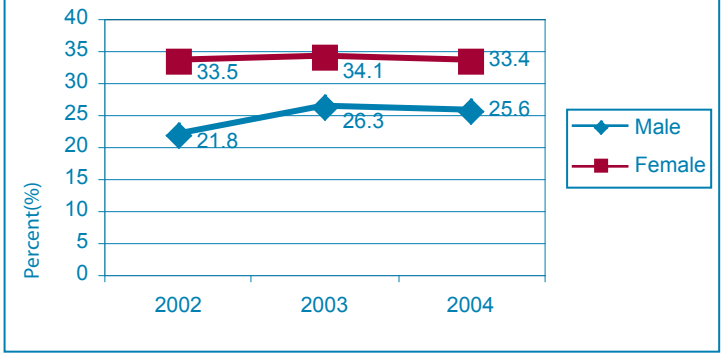
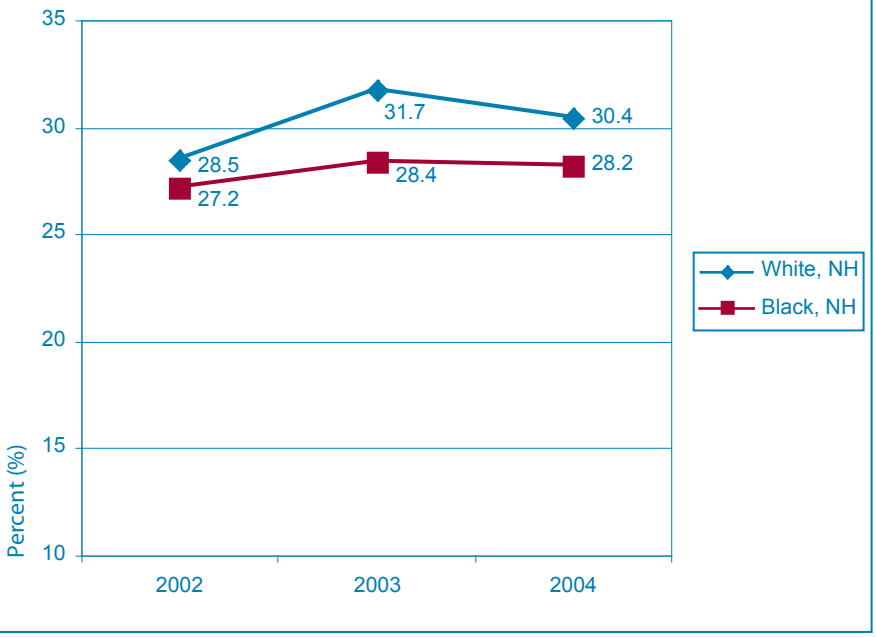


Fig. 7. Prevalence of Doctor-Diagnosed Arthritis among the General Population of South Carolina, by Race, BRFSS 2002-2004



Activity Limitations due to Joint Symptoms

One of the impacts of arthritis is activity limitation. According to 2004 BRFSS, more than one in 10 (11.1 percent) of South Carolinians, and four out of every 10 people with arthritis reportred activity limitations due to arthritis. Over one third (37 percent) of South Carolina adults reported activity limitation attributable to CJS.

Among the general population of South Carolina, there were significant differences in prevalence of activity limitations due to chronic joint symptoms among age groups. People in the 45-64 age group were four times more likely to report activity limitations than people in the 18-44 age group People over the age of 65 were five times more likely to report activity limitations than those 18 to 44. However, among people with arthritis, there was no appreciable difference in activity limitation among age groups. Among all South Carolinians, activity limitation due to chronic joint symptoms was significantly higher in females. Among people with arthritis, those with less than a high school education were more than twice as likely to have activity limitations than those with some college education. No significant difference in prevalence of activity limitations existed among any demographic groups, except among people with arthritis who have less than a high school diploma. This group was 60 percent more likely to have activity limitation due to CJS than those with some college. The prevalence of activity limitations due to CSS has remained relatively stable between 2002 and 2004 among both the general population and people with arthritis (Fig 8 and Fig. 9).

Fig. 8 Prevalence of Activity limitation in Adults with Doctor Diagnosed Arthritis among the general Population, SC BRFSS 2002-2004

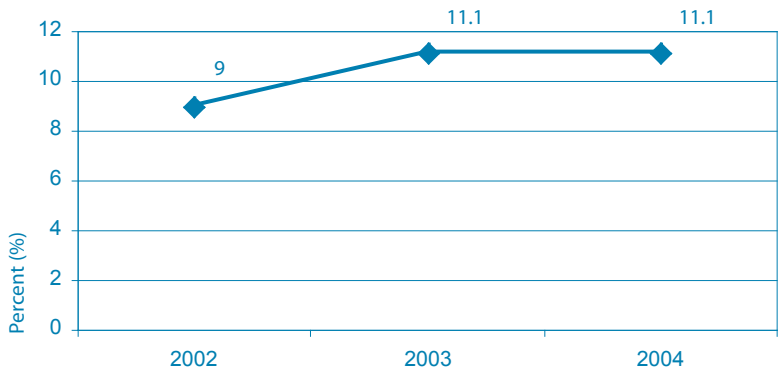
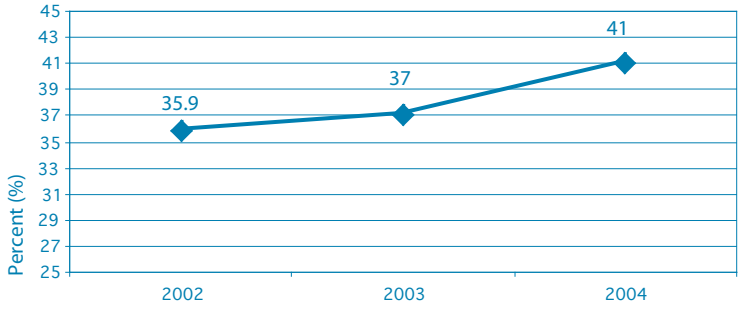


Fig. 9. Prevalence of Activity limitation in Adults with Doctor Diagnosed Arthritis among cases of Doctor-Diagnosed Arthritis, SC BRFSS 2002-2004



Healthy Days – Mental and Physical

Arthritis is a painful and debilitating condition that can affect one's mental and physical wellbeing. The 2004 Behavioral Risk Factor Surveillance System (BRFSS) asked questions that dealt with respondents' perceptions of their physical health, mental health, and activity limitations, as well as their level of pain, depression, stress, and ability to get enough rest.

According to 2004 S.C. BRFSS, people with arthritis had more days of poor physical health and mental health than people without arthritis. People with arthritis had more than three times as many days of poor physical health, almost twice as many days of poor mental health and more than twice as many days with activity limitations than people without arthritis.

People with arthritis reported having more pain, depression and stress, and inadequate rest than people without arthritis. People with arthritis had more than three times as many pain episodes and almost twice as many stressful days as those without arthritis.

People who have arthritis were 75 percent more likely to be depressed and 25 percent more likely to get inadequate rest as those without arthritis.

In 2004 South Carolina administered the BRFSS Arthritis Management Module. These questions, which dealt with daily arthritis management and how arthritis affects daily life, were asked only of respondents who answered "Yes" to whether they had received a doctor-diagnosis of arthritis. Slightly more than one in 10 (12.5 percent) of people with arthritis reported having taken a self-management course. No differences were shown by age group, race/ethnicity, education level, or gender. More than one half (55 percent) of people with arthritis reported that their physician had recommended exercise and one third of overweight or obese arthritis patients (44.7 percent) reported that weight loss was recommended for management of arthritis symptoms. Both weight loss and exercise were recommended significantly more for women than men. No differences were reported by education level, age, gender, or race/ethnicity.

Arthritis affects one's ability to live a normal life and do the things that one needs to do. Overall in 2004, less than one in four people with arthritis (23.1 percent) said they could do everything; and 42 percent said they could do most things. Only 20.3 percent said they could do some things, and slightly more than one out of 10 (11 percent) said they could hardly do anything. Being able to do everything was significantly higher in males, and decreased significantly with increasing age. No racial differences were shown. The ability to do most things was higher among Whites than African-Americans, and showed no gender or age differences. Those who reported an inability to do some things increased with age. The same was true of those reporting they could hardly do anything. The prevalence in respondents who reported an inability to do some or very few things increased with age and was almost nonexistent in the 18-44 age groups. The prevalence of those who could do everything decreased with advancing age.

Unable to work due to Arthritis

More than one third (35.7 percent) of people with arthritis reported that their arthritis affected the type or amount of work they do. No differences in work complications or cessation due to arthritis were reported by gender. The White population was significantly less likely to have had arthritis affect their work than African Americans. Education level was significantly associated with whether work was affected by arthritis. More than half (58 percent) of those with less than high school education had their work affected by arthritis, whereas only one in four (26.3 percent) of college graduates had their work affected by arthritis. The prevalence of arthritis affecting work decreases significantly as educational level increases.

Economic Indicators – Cost of Arthritis Care

South Carolina Hospitalization and ER Visits

South Carolina Hospital Discharge and Emergency Room data were used to measure the direct cost of arthritis care on the health care system. Arthritis and other rheumatic conditions were defined using the National Arthritis Data Workgroup definition. This creates a partial picture of the cost burden for South Carolina, as primary physician visits are not included in the data.

In 2003, there were approximately 12,499 discharges from hospitals that were labeled with a primary diagnosis code for arthritis. This was 2.3 percent of the total discharges for 2003 in South Carolina. These discharges amounted to approximately 55,425 days of care and over $366 million. The average cost for a hospital stay with an arthritis diagnosis was $29,333 and the average length of stay was 4.4 days. A large percentage of hospital stays for arthritis were for Whites and for those 45 years of age and older.

In 2003, there were a total of 5,494 knee replacements completed in South Carolina. These procedures amounted to 23,355 days of care and a cost exceeding $180 million. The average length of stay was 4.3 days and average cost of the operation was $32,877. Whites and people 65 years of age and older had the majority of knee replacements.

Risk Factors

Certain factors are known to be associated with a greater risk of arthritis. Three of these factors are non-modifiable: female, older age, and genetic predisposition. In South Carolina, approximately 33 percent of women and 57 percent of those 65 years and older have arthritis, based on data from the 2004 S.C. BRFSS. Even though these factors cannot be changed, knowledge of their presence helps identify groups at higher risk for arthritis, so that intervention efforts can be targeted accordingly.

Some demographic factors, such as lower levels of education and lower income, are associated with

Economic Indicators – Cost of Arthritis Care

arthritis. In South Carolina, approximately 41 percent of people with less than a high school education have arthritis, based on data from the 2004 S.C. BRFSS. Although these risk factors are potentially modifiable, it is not clear if modifying them would indeed reduce the risk of arthritis, since the mechanisms by which they increase that risk are not yet understood.

There are a few clearly modifiable risk factors for arthritis: obesity, joint injuries, infections, and certain occupations.

Obesity and Physical Inactivity

Data from the 2002 National Health Interview Survey (NHIS) indicate that a higher risk for arthritis is associated with obesity. Approximately 35 percent of obese people reported having arthritis, compared to 21 percent of normal weight people. In South Carolina, 38.7 percent of people who are obese and 42.6 percent of people who reported no leisure time physical activity in the past month reported a doctor-diagnosis of arthritis.

According to the S.C. 2004 BRFSS, 25.1 percent of adults were obese. Those with a college education (17.3 percent) and Whites (21.1 percent) had lower prevalence of obesity than those with less than a high school education (30.6 percent) and African Americans (36.0 percent). There was no appreciable difference between genders or among age groups.

Among adults in South Carolina, 23.8 percent reported no leisure time physical activity in the past month, and 14.3 percent reported no physical activity at all. Forty-six percent of adults responded that they met current recommendations for physical activity. Demographic groups that were more likely to report meeting the physical activity recommendations were: males, Whites, those younger than age 45, and those with more than a high school education.

Lessening the Burden of Arthritis

Needs Assessment 2002

Purpose and Objective

In partnership with the Arthritis Foundation Carolinas Chapter, the S.C. Arthritis Program contracted with the University of South Carolina Arnold School of Public Health Prevention Research Center to conduct a needs assessment of people with arthritis. The purpose of the assessment was to gather information that would provide guidance for program development. The objective was to determine needs of people with arthritis related to information, resources and services, and quality of life.

Method

Five focus groups were conducted, two fibromyalgia groups, two osteoarthritis/rheumatoid arthritis groups, and one lupus group. The focus groups were held in Columbia, Charleston, Greenville, Orangeburg, and Spartanburg. Participants were recruited throughout the state via support groups and physical therapists.

Participants

A total of 32 individuals participated. Overall, the participants ranged in age from 27 through 77 and were primarily White females with at least a high school education and a family income of $25,000 or less.

Results

Information

Most participants were not satisfied with the amount, quality, or availability of arthritis-related information. They found little information available in terms of origin, symptoms, and treatment.

Resources and Barriers

Satisfaction of available services varied among participants. Some found acupuncture, aquatics, and medications helpful in providing relief from pain and providing improved mobility and functioning. Others, however, did not find these services beneficial for a variety of reasons, including cost. Common areas of dissatisfaction included: inappropriate water temperature

for aquatics ("too cold"), exorbitant costs for medication and services, inability to take certain drugs due to allergies or negative side effects, and negative physician-client interactions, including reports of physicians not listening to patients, under-prescribing medications, and not being knowledgeable about the condition.

Participants pointed out a number of barriers to services, including lack of insurance coverage and some services not covered by insurance, cost of medications, financial concerns when not working and applying for disability, services only available during traditional hours, and negative physician-client interactions.

Unmet Needs

The following suggestions were offered to address resources that are not currently available or to improve current resources:

- Physicians need more education about arthritis and arthritis-related ailments, including updates on treatment options, interactions with clients, and current research.
- More communication and coordination is needed between traditional medicine and complementary approaches, especially in the area of research.
- People with arthritis need information easily accessible from a centralized clearinghouse (toll-free hot line, videotapes with appropriate exercises, printed materials that explain the illness and explain the importance of exercise, educational workshops).
- People with arthritis need affordable access to aquatics, massage therapy, home health care, and home assistance.
- People with arthritis need nutrition-specific education workshops to combat weight gain and to understand the interaction of foods on their arthritis condition.
- People with arthritis need assistance with acquiring disability benefits.
- Additional research about arthritis treatment is needed, and people with arthritis need to be kept aware of opportunities to participate in research studies.
- People with arthritis need to have mental health assistance without fear of professional repercussions.

Quality of Life

Participants shared how their medical conditions impacted their lives. Overwhelmingly, arthritis has penetrated and negatively affected every aspect of their lives and the lives of those around them. Participants shared a lengthy list of physical and emotional symptoms, strategies for coping, reactions from others, and limitations with regard to work, family, and recreation.

Summary

In general, participants discussed the devastating physical and mental effects of arthritis on themselves, their families, their work, and their overall quality of life. When discussing resources available in their community to assist them, most participants conveyed their dissatisfaction with both the quantity and quality of services and cited high cost and low accessibility as barriers to utilizing the minimal resources currently available. In addressing their dissatisfaction with current services, participants shared suggestions and ideas of improving existing services, as well as ideas for new services for both those living with arthritis and those assisting them.

Strategies for Prevention

Primary Prevention

"*Primary prevention* is designed to prevent a disease or condition (arthritis, for example) from occurring in the first place" (National Arthritis Action Plan [NAAP]). Strategies for the primary prevention of arthritis would include such things as weight management, proper nutrition and avoiding injuries and infections.

Injury to joints increases the occurrence of arthritis with age. An infection, such as Lyme disease, may also lead to the onset of arthritis in a joint. Obesity, or above normal body mass index, puts stress and damage on joints and may contribute to the onset of arthritis. Therefore, avoiding injuries, managing weight, and eating a healthy diet are important measures in preventing damage and stress to joints and reducing the risk of developing arthritis later in life.

Secondary Prevention

"Secondary prevention attempts to identify a disease in its earliest stage so that prompt and appropriate management can be initiated. Successful secondary prevention reduces the impact of the disease" (NAAP).

For arthritis, early detection and diagnosis of the disease helps to alleviate the full impact of the disease on an individual. Work and activity limitation due to the symptoms may be avoided. When arthritis is detected early and a patient is under a doctor's care, he or she may be able to participate in a physical activity program or self-management program to reduce impact of the disease on daily life.

Tertiary Prevention--"Best Practices" for Arthritis Management

The NAAP defines tertiary prevention as focusing on reducing or minimizing the consequences of a disease once it has developed. "The goal of tertiary prevention is to eliminate, or at least delay, the onset of complications and disability due to the disease. Most medical interventions fall into this level" (NAAP).

Treatment

Today, more treatment options and more effective forms of treatment are available for the many forms of arthritis than existed in the past. Due to advances in treatment, it is more important than ever for people with chronic joint symptoms or other symptoms of arthritis to see a doctor early to determine what type of arthritis they have. Once the type of arthritis is determined, appropriate treatment can be prescribed and implemented. For some forms of arthritis, early treatment can impact the course of the disease; and for other forms, it can help with symptom relief and quality of life.

Osteoarthritis (OA)

Early detection and treatment are important in managing OA. The goal of treatment is to relieve symptoms and improve function. Common treatments include exercise, weight control, physical and occupational therapy, joint protection, medication, non-drug pain relief, surgery, and complementary approaches. Generally, a combination of treatments is used.

Research shows that exercise and maintaining a healthy weight are effective treatments for OA. Exercise can reduce pain, improve mobility, help maintain a healthy weight, and improve mood. A doctor or physical therapist can recommend exercises that suit each person. Maintaining a healthy weight can help reduce the stress on weight-bearing joints and the potential for further injury. A dietitian can help patients develop a healthy eating plan.

Medication can help reduce pain and inflammation and improve function. Non-drug pain relief, such as warm towels or hot packs, or in some instances, cold packs, may also be used for treatment. Water therapy in a heated pool or whirlpool can also be helpful. A doctor or occupational therapist may recommend a splint to protect the joint. Finally, surgery to replace the joint may be recommended to reduce pain and disability.

Strategies for Prevention

Rheumatoid Arthritis (RA)

Because RA presents in several areas and ways, treatment is designed for the individual relative to the severity, other medical conditions, and lifestyle. Treatment methods focus on relieving pain and inflammation, stopping or slowing joint damage, and improving function. Treatment includes medication, surgery, and self-management methods, such as exercise, good nutrition, and stress management. Early diagnosis and treatment are especially important for this type of arthritis because new drug therapies can modify the course of the disease.

There is no cure for RA, but drugs, such as disease-modifying anti-rheumatic drugs (DMARDs) that slow the disease process and biologic response modifiers that reduce inflammation and structural damage to the joints, offer hope. Studies show that early treatment with a high dosage of medication and the use of drug combinations, rather than one medication alone, may be effective in reducing or preventing joint damage. Once the disease improves, the doctor may gradually reduce the dosage or prescribe a milder medication.

Surgery may be helpful, but should be performed only after careful consideration by the patient and doctor, including discussion of the costs, risks and potential benefits, and the patient's overall health status. Common procedures are joint replacement, tendon reconstruction, and synovectomy (removal of the inflamed synovial tissue). The primary purpose of surgery is to reduce pain and improve joint function and the performance of every day activities.

Lupus

Regular medical care is essential in treating lupus; and a team approach is helpful, particularly if there are a number of organ systems involved. The focus of treatment is to prevent and treat flare-ups and to minimize organ damage and complications. Advances in medication offer more treatment options and more effective treatment than in the past. Medications used may include nonsteroidal anti-inflammatory or steroid drugs, anti-malarials, immunosuppressives, or disease-modifying anti-rheumatic drugs.

In addition to medication, there are a number of other treatment approaches that can be helpful. Self-management approaches and wellness measures, such as diet, rest, exercise, stress management, and social support can be beneficial. Skin protection from the sun is also important. A number of people with lupus also use complementary therapies. While complementary approaches, such as use of nutritional supplements, ointments and creams, chiropractic treatment, and homeopathy may not be harmful and may offer some symptomatic relief, no research shows that they modify the course of the disease or reduce organ damage.

Fibromyalgia Syndrome (FMS)

Fibromyalgia can be difficult to treat. Generally, treatment works best when a doctor who is familiar treating FMS, a physical therapist, other health professionals, and the patient work together as a team. Because finding health professionals who are knowledgeable about FMS may be difficult, the patient should take an active role in seeking the expertise of various specialists.

While there is no medication specifically for FMS, there are a number of drugs that can help with symptom relief. Pain relievers, anti-inflammatory drugs, and anti-depressants are frequently used to treat FMS. Medications for irritable bowel syndrome, sleep medications, muscle relaxants, and headache remedies may also be used, depending on the patient's individual symptoms.

Patient education is very important in managing FMS. Self-management approaches, such as exercising, eating a healthy diet, getting plenty of rest, and managing stress can be helpful. Physical and occupational therapy may also help with symptom relief. Additionally, many people with FMS report some benefits from complementary therapies, such as massage, chiropractic, acupuncture, herbs, and supplements.

Strategies for Prevention

Arthritis Self-management

What is Self-management?

While access to medical care is important for enhanced quality of life among people with a chronic illness, effective self-management is equally essential. Self-management has been defined as "the individual's ability to manage the symptoms, treatment, physical, and psychosocial consequences and lifestyle changes inherent in living with a chronic condition" (Barlow, 2002). While self-management involves the individual's knowledge and skills about self-care and a supportive social environment, equally important to self-management is the presence of a partnership between the individual and the health care provider (Holman & Lorig, 2000). Effective self-management of arthritis involves not only the ability to adhere to a medical regimen (e.g., use splints, exercise, take medication, seek appropriate care), it requires the individual to self-monitor, make decisions, and achieve cognitive, behavioral and emotional responses (Barlow, 2002) that lead to the highest quality of life and lowest levels of pain and disability.

Arthritis Self-management Interventions (SMI)

Interventions designed to promote effective arthritis self-management are typically cognitive-behavioral approaches (Newman, Steed, & Mulligan, 2004) and include attention to: knowledge of the disease and the medical regimen; skills in self-monitoring, problem-solving, and goal-setting; enhanced self-efficacy (confidence in one's ability to perform the necessary behaviors); coping strategies for pain, stress, and anxiety/depression; effective communication with health care providers; marshalling social support; and specific skills related to arthritis self-care such as exercise, diet, and stress management. Arthritis self-management education programs may be delivered face-to-face, in small groups, and with workbook and audiotape and may be led by professionals or lay leaders. The superiority of one approach over another has not been determined (Newman, Steed & Mulligan, 2004).

Strategies for Prevention

Reviews of Effectiveness

Several recent reviews of arthritis self-management interventions (SMIs) have made the following conclusions.

- Newman, Steed & Mulligan, 2004 -
  - Roughly 40 percent of SMIs for arthritis reviewed showed some improvement in self-reported symptoms or measures of disability. The least favorable outcomes for the studies reviewed were for effects on pain and disability among persons with rheumatoid arthritis. A few studies have shown small, short-term improvements for people with rheumatoid arthritis, although stronger benefits are seen for osteoarthritis.
  - Studies evaluating the Arthritis Self-Management Program are mixed in terms of outcomes. Ten studies reviewed assessed psychological well-being; six found benefits. All six used cognitive-behavioral strategies. Little effect was found for quality of life.
  - Fifty percent of arthritis SMIs reviewed did not assess behavior change, even though the program focused on diet, exercise and/or coping. The majority of studies measuring behavior change found improvements. In some studies, behavior changes have been found without concurrent improvements in clinical or symptomatic outcomes of importance. Measurement problems may confound assessment of the relationship between behavior and other desired outcomes.
  - Of six SMI studies reviewed that assessed use of health care as an outcome, two found reductions in use.
  - Long-term adherence to behaviors or other benefits from the SMIs reviewed is unknown.

- Warsi A, Wang PS, LaValley MP, Avorn J, Solomon DH, 2004 –
  - Among 24 arthritis SMIs included in a meta-analysis, the pooled effects did not show significant improvement in clinical outcomes.
  - Heterogeneity of studies made assessment of effectiveness difficult, and there is evidence of publication bias across studies of SMIs for several chronic illnesses. Important attributes and behaviors are not consistently reported or measured.
- Brady TJ, Kruger J, Helmick CG, Callahan LF, Boutaugh ML, 2003 -
  - Five packaged SMIs were reviewed, including group programs: the Arthritis Self-Help Course (ASHC, since renamed Arthritis Foundation Self-Help Program), the Systemic Lupus Erythematosus Self-Help Course (SLESH), the Fibromyalgia Self-Help Course (FSHC); and individual programs: the Self-Management Arthritis Treatment (SMART) and the Bone-Up on Arthritis program (BUOA). Descriptions of these courses are included.
  - Key results from the ASHC have been improved knowledge, behaviors, and perceived self-efficacy to manage arthritis and reduced pain. A four-year follow-up study of the ASHC found less pain and physician visits among participants compared to controls, with suggested cost savings.
  - The SLESH, similar in format to the ASHC, has been evaluated with one small, single group pretest/posttest study. Slight reductions in depression and pain and increases in exercise and relaxation were found.
  - The FSHC, evaluated with a single group, pretest-posttest design, show decreased depression and increased quality of life and self-efficacy.

Strategies for Prevention

- The BUOA, a home self-study program, was developed for people of low literacy. A controlled trial found significant increases in knowledge and behaviors and decreased feelings of helplessness at four months, which were sustained at eight and 12 months. This program, revised in a higher literacy form, is called Arthritis Basics for Change.
- The SMART (also known as Arthritis Home Health program) is a mail-delivered program. A controlled evaluation found better physical function, less pain, greater self-efficacy, and fewer doctor visits at six months, which were maintained at one year. A second controlled trial found reduced depression and pain and improved role function and self-efficacy. Some improvements were sustained at two years but not at three years' followup. A comparison of ASHC and SMART found comparable results at one and two-year followup, but ASHC was superior at three-year followup.
- Brady and colleagues concluded that overall, evaluation evidence for self-help programs is modest because of the limited number of studies on each course. Lack of diversity in participants in these studies limits the ability to generalize the results to minority and underserved populations. More studies are needed to determine cost-effectiveness and dissemination.

Summary:

Effectiveness of Self-Management Programs

SMIs for arthritis show improvements in knowledge, self-efficacy, and self-care behaviors. Some evidence has been found for reduction in pain and depression. More research is needed regarding SMIs' effects on clinical outcomes, cost-effectiveness and generalizability to underserved and minority groups.

Strategies for Prevention

Physical Activity and Arthritis

Importance of Physical Activity in Managing Arthritis

Physical activity is an important factor in preventing and managing arthritis (Arthritis Foundation et al., 1999; Calkins, 1999; Creamer & Hochberg 1999; Hochberg MC, Altman RD, Brandt KD et al., 1995). Both aerobic exercise and weight resistance exercise lead to improved functional, psychosocial, and pain-related outcomes (Arthritis Foundation et al., 1999; American Geriatrics Society, 2001; Hurley, Mitchell & Walsh, 2003; Penninx, Rejeski, Pandya et al., 2003).

Physical Activity Recommendations for People with Arthritis

The current recommendations for physical activity to achieve overall health benefits advocate that adults engage in at least 30 minutes of moderate-intensity activity on most, preferably all, days of the week (Pate, Pratt, Blair et al.,1995). Despite the fact that people with rheumatoid and osteoarthritis can benefit from meeting the moderate physical activity recommendations (American Geriatrics Society, 2001), people with arthritis are less likely to meet this recommendation than other adults (Hootman, Macera, Ham, Helmick & Sniezek, 2003; Stenstrom & Minor, 2003). It should be noted that current recommendations for overall health benefits focus on lifestyle physical activity, of which planned, structured exercise is one component. Lifestyle activities can meet the current recommendations, such as gardening, walking the dog, and washing the car, as long as they are of moderate intensity.

Programs designed specifically for people with arthritis may focus on flexibility and strength conditioning, in addition to aerobic activities. *The National Arthritis Plan* advocates increasing the proportion of people with arthritis who engage in any leisure time physical activity, sustained physical activity for at least 30 minutes daily, and /or vigorous physical activity on three or more days per week.

In 2002, a consensus conference sponsored by the American College of Rheumatology was held concerning arthritis and physical activity (Minor, 2003). Summaries of working group recommendations with specific physical activity recommendations, research agenda items, and strategies for implementation are available regarding: biomechanical considerations for exercise (Krebs, Herzog, McGibbon & Sharma, 2003); exercise in the presence of rheumatic diseases (Chang, Roubenoff, Mayer, Brandt & Schanberg, 2003); evidence of benefit of exercise and physical activity in arthritis (Minor, Stenstrom, Klepper, Hurley & Ettinger, 2003); and population approaches to health promotion and disability prevention through physical activity (Meenan, Sharpe, Boutaugh & Brady, 2003).

Physical Activity Participation among People with Arthritis

Wilcox and colleagues (2005, in press) reviewed 36 studies to determine the most important correlates of physical activity among people with arthritis. Self-efficacy, perceived benefits of physical activity, mental well-being, and prior physical activity were positively correlated, while pain level and perceived barriers were negatively correlated with physical activity. These factors received the most consistent support as correlates across the studies, while socio-demographic, social, and environmental variables were the least studied; and findings were inconsistent across studies. Homogeneity of study populations, heterogeneity of measures, and differing arthritis types limit the ability to make definitive conclusions that would generalize to all people with arthritis.

Wilcox and colleagues conducted a focus groups study in South Carolina of the predictors of successful and unsuccessful exercisers among people with arthritis (Wilcox, Sharpe, Der Ananian, Vrazel, Abbott, Ramsey; 2004; Wilcox, Der Ananian, Abbot, Vrazel, Ramsey, Sharpe, Brady, 2005). Twelve focus groups with 68 participants were conducted. Two groups were conducted with each of the following socio-demographic groups: lower SES and White exercisers, lower SES

and African American exercisers, higher SES exercisers of any race, lower SES and White non-exercisers, lower SES and African American non-exercisers, and higher SES non-exercisers of any race. Overall findings include:

- Failure of health care providers to recommend exercise and to provide adequate instructions or referrals.
- Wider availability of programs specifically for people with arthritis needed.

Successful exercisers and non-exercisers named similar barriers, but successful exercisers seemed less likely to allow these barriers to prevent exercise, and often modified their exercise to accommodate their physical limitations. Non-exercisers were more likely to have given up exercise or reduced activity in response to barriers.

Successful exercisers cited internal motivation, the use of self-regulatory skills, and enjoyment as major psychological enablers. Pain relief and improved mobility from exercise were the major motivators for exercisers and non-exercisers. Paradoxically, pain was also a primary reason for non-exercisers to quit.

The authors concluded that motivational messages need to address personally meaningful outcomes for people with arthritis and explain pain reduction from exercise is a long-term outcome, while pain may increase temporarily immediately after exercise.

Effectiveness of Packaged Community-Based Physical Activity Programs for People with Arthritis

Evaluation of physical activity or exercise programs designed specifically for people with arthritis are sparse. Boutaugh (2003) and Brady et al. (2003) reviewed the evidence for effectiveness of two Arthritis Foundation programs, the Arthritis Foundation Aquatic Program (AFAP) and the People with Arthritis Can Exercise (PACE) program (recently renamed the Arthritis Foundation Exercise Program). Much of the evaluation of PACE and AFAP consists of unpublished studies and pilot studies, although a few randomized studies and a quasi-experiment have been conducted (Boutaugh, 2003).

In addition to traditional exercises, AFAP and PACE include breathing and relaxation techniques and games, and PACE also includes health education and behavioral strategies for increasing physical activity (Boutaugh, 2003). PACE is a community-based program offered in a group format that encourages peer interaction. Instructors can select from 72 exercises. Non-randomized and pilot studies of PACE indicate it improves self-care behaviors, pain, depression, mood, functional ability, self-efficacy, ability to perform everyday tasks, arthritis symptoms in the past month, and knowledge of self-care, as well as being safe for people with RA or OA. The AFAP has been found to reduce pain, and improve functional status, range of motion, muscle strength, wellbeing, and quality of life. In addition to improving mental and physical health, it has been found to reduce doctor visits (Boutaugh, 2003; Brady et al., 2003).

Joint Efforts is a low-impact program developed by the Arthritis Foundation that focuses on sedentary older adults. It include six to eight weeks of chair exercises, including a 15 minute warm-up and 30 minutes of range of motion and strengthening exercises. Partner activities focus on better balance, coordination, and endurance. A non-randomized pilot study found reduction in pain and stiffness and improvement in self-care after four months, measured against a comparison group (Arthritis Foundation, 1987; Brady et al., 2003).

EDUCIZE combines low-impact aerobics with discussions. It was initially tested with people with rheumatoid arthritis but has been offered to people with lupus, fibromyalgia, osteoarthritis, and low back pain. It includes six weeks of 12 two-hour sessions that focus on flexilibity, strengthening, and relaxation training, followed by a group discussion. Evaluation of a 16-week, 32-session version, using a single group pre-post-test

design, showed significant pre to post-test improvements in disease status, physical function, psychological function, and quality of life (Perlman, Connell, Clark et al. 1990; Connell, Gecht & Conlon-Grosso, 1993). Another controlled 12-week, 24-session study found similar results. Video and printed materials are available to train professionals to conduct these sessions.

Population-based Approaches to Increase Physical Activity among People with Arthritis

Population-based approaches to increase physical activity among people with arthritis have included CDC's health communications campaign "Physical Activity: The Arthritis Pain Reliever," materials from which were made available to state public health departments (Brady & Sniezek, 2003), as well as health-department-based interventions, such as "It's your life: Join the Movement" in Georgia and a multi-component, multi-site intervention in California. The Georgia program involves person-to-person modeling and social support to increase physical activity among people with arthritis. The California program uses both the "Arthritis Pain Reliever" and a community-based physical activity intervention. The projects are being evaluated (Brady & Sniezek, 2003). Local arthritis action programs have also been encouraged to participate in community-wide initiatives that promote a more user-friendly community environment, such as supporting walking trails, sidewalks, and other community amenities conducive to an active lifestyle (Sharpe, 2003).

Nutrition and Complementary Care

Introduction

Many people suffering from arthritis, desperate to escape from adverse side effects of drug therapy, are seeking a more natural approach, mostly through diet and dietary supplements, to treat their symptoms. Many special diets, foods, and supplements claim to cure or prevent arthritis, but most are unproven (Hudnall, 1999).

According to the Arthritis Foundation (2003), there are key questions to ask about diet claims including:

- Does the diet eliminate any complete group of foods from the Food Guide Pyramid?
- Does the diet stress only a few foods or eliminate others?

If you can answer yes to these questions, then the diet is probably unproven. Despite the false claims, some scientific research demonstrates positive responses to nutrition therapy.

Weight Management

The most scientifically-supported-diet-related treatment for arthritis is avoiding excess weight and consuming a diet that resembles the Food Guide Pyramid (http://www.mypyramid.com).

Obesity is a modifiable risk factor for development of OA, particularly of the hand, hip and knee (Oliveria, Felson, Cirillo, Reed, Walker, 1999). Overweight increases the weight load across a joint, and increases stress on cartilage, which can induce joint deterioration leading to OA. Weight loss may prevent OA and may lessen symptoms in individuals already suffering from the disease. More than 70 percent of total hip and knee replacements are for OA (Felson, 1996). Higher body mass index has been linked to an increased risk of hip replacement due to OA (Karlson, Mandl, Aweh, Sangha, Liang, Grodstein, 2003).

Weight loss has been proposed as a first choice therapy for OA of the knee. In a randomized, controlled trial, 80 elderly obese patients with OA of the knee who followed an intensive eight-week weight loss plan, and experienced a 10 percent weight reduction, improved physical function by 28 percent. (Christensen, Astrup, Bliddal, 2005).

Common symptoms of arthritis include pain, decreased physical function, and mobility. The Arthritis Diet, and Activity Promotion Trial (ADAPT), an 18-month clinical trial funded by the National Institutes of Health, was the first large, randomized trial designed to determine the most effective method of improving

mobility, pain, and physical function in inactive, older overweight and obese adults with OA of the knee. In this trial, 316 overweight adults 60 years of age and older with knee OA were randomized into four different groups: healthy lifestyle (control), diet only, exercise only, and diet combined with exercise.

Results indicated that the combined method of weight loss through diet and exercise provided the best overall improvement in physical function, pain, and mobility in the subjects suffering from OA of the knee (Messier, Loeser, Miller, Morgan, Rejeski, Sevick et al, 2004).

The 2000 American College of Rheumatology Guidelines recommend that overweight individuals with hip or knee OA lose weight (American College of Rheumatology, 2000). Obesity in middle age is associated with increased risk of knee OA in later life, suggesting that primary prevention of overweight and obesity should begin during adolescence and young adulthood (Gelber, Hochberg, Mead, Wang, Wigley, Klag, 1999). According to Toda, Toda, Takemura, Wada, Morimoto, and Ogawa (1998), a reduction in body fat, rather than overall body weight, may be more important in relieving symptoms of knee OA.

Fatty Acids

Fish oil supplements, which contain eicosopentaenoic acid (EPA) and docosahexaenoic acid (DHA), have been considered standard therapy to treat RA (Cleland & James, 2000), but concerns exist regarding long-term ingestion and minimum and maximum effective ingestion levels (Rennie, Hughes, Lang, Jebb, 2003). Research by Remans, Scount, Wagenarr, Wouters-Wesseling, Zuijderduin, Jongma et al. (2004) narrowed the dosage range to 1.4 grams EPA, 0.211 grams DHA, and 0.5 grams gamma-linolenic acid (GLA) per day. The dosage resulted in an increase in blood plasma concentrations of EPA and DHA but no significant change in tender joint count or other clinical measure. At the same time, research addressing the success of plant sources of omega 3 fatty acids is lacking (Rennie, Hughes, Lang, Jebb, 2003)

Altering levels of fatty acid intake leads to changes in levels of eicosanoids, that mediate inflammation and cytokines that in turn, regulate the inflammation response. These changes can alter cellular processes that impact the disease process (Darlington & Stone, 2001). When linoleic acid, omega-6 fatty acids are ingested, they are metabolized to substances that promote inflammation; on the other hand, when alpha linolenic acid, omega-3 fatty acids, are ingested they are metabolized to substances that are weakly anti-inflammatory (James, Proudman, Cleland, 2003).

For individuals who wish to increase omega-3 fatty acid ingestion, the hurdles of supplementation must be recognized and addressed to increase the likelihood of success. Individuals choosing fish oil supplements may need to ingest a high number of capsules and may experience a fishy aftertaste. Those choosing food sources of omega-3 fatty acids may face new food ingredients and fish selections that may be unfamiliar. In either case, patient education to overcome these obstacles is important.

Decreasing omega-6 linoleic fatty acid intake may be helpful to effectively increase the effect of omega-3 in the body. Metabolism of omega-3 and omega-6 fatty acids utilizes the same enzymes. If omega-6 fatty acids in the diet are decreased, then those enzymes are available to increase omega-3 fatty acid metabolism and its derivatives (DHA and EPA). The best approach to increase the overall impact of dietary omega-3 fatty acids may be a decrease in omega-6 fatty acid intake and supplementation with fish oil (Cleland et al., 2003). Similarly, Adam, Beringer, Kless, Lemmen, Adam, Wiseman, et al (2003) found that for RA sufferers a dietary decrease in arachidonic acid (AA), a derivative of omega-6 fatty acids, decreased clinical markers of inflammation and increased the anti-inflammatory influences of fish oil supplements.

Vegetarian & Mediterranean Diet

Certain foods, in particular red meat, have been implicated in inducing an inflammatory response in

individuals suffering from arthritis. In a case control study, individuals who consumed the highest level of red meat had a greater than two-fold risk of developing the inflammatory conditions of arthritis; and a higher total protein intake increased the risk by almost three-fold (Pattison, Symmons, Lunt, Welch, Luben, Bingham, et al., 2004). Red meat has been linked to increased risk of RA, because it provides a dietary source of arachidonic acid, a fatty acid that is involved in the production of pro-inflammatory eicosanoids (Choi, 2005; Adam et al., 2003). Adam et al (2003) demonstrated that a diet low in arachidonic acid ameliorates clinical signs of inflammation in RA patients. Meat fat, nitrite, and iron in meat may lead to increased inflammation and free radical production (Grant, 2000).

Fasting reduces inflammation and pain of RA. However, fasting can be safely practiced only for a limited time, so without further diet therapy, it is of little therapeutic value (Muller, de Toledo, Resch, 2001). Kjeldsen-Kragh (1999) found that fasting, followed by a vegetarian diet, had a favorable influence in individuals with RA.

The Western diet, characterized by high levels of red meat consumption and lower fish, vegetable, and olive oil consumption, has received attention as being a possible risk factor for RA. The Mediterranean diet, consisting of less red meat and poultry, more fish, olive oil as the principal source of fat, moderate wine consumption, and an abundance of fruits, vegetables, whole-grain cereals, nuts and legumes may be beneficial in preventing and relieving symptoms of RA, including a reduction in inflammatory activity, an increase in physical function, and improved vitality (Skoldstam, Hagfors, Johansson, 2003; Choi, 2005). Increasing consumption of cooked vegetables and olive oil has shown the most significant reduction in the development of RA (Linos, Kaklamani, Kaklamani, Kourmantaki, Giziaki, Papazoglou et al., 1999). Olive oil is the main fatty component of a Mediterranean diet, consisting mostly of monounsaturated fatty acids as well as a high level of antioxidant agents (Alarcon de la Lastra, Barranco, Motilva, Herrerias, 2001).

Fresh fruits and vegetables are rich in natural antioxidants and may contribute to better control of inflammatory conditions (Skoldstam, Hagfors, Johansson, 2003). Antioxidants protect against free-radical oxidation products in the bloodstream, and thus prevent damage to tissues (Pattison, Harrison, Symmons, 2004). A prospective cohort study of 29,368 women from 1986 to 1997 showed that subjects with greater intakes of certain antioxidants, particularly beta-cryptoxanthin (a carotenoid found in fruit and vegetables), and zinc were less likely to develop RA. In addition, diets high in fruits and cruciferous vegetables (such as broccoli and cabbage) may have protective benefits (Cerhan, Saag, Merlino, Mikuls, Criswell, 2003).

Vitamins and Minerals

Nutrients acting as antioxidants, including selenium, vitamins A (retinol and beta-carotene), C, and E may have a role in prevention or repair of oxidative tissue damage caused by free oxygen radicals (Henderson & Panush 1999; Comstock, Burke, Hoffman, Helzlsouer, Bendich, Masi, et al, 1997; Heliovaara, Knekt, Aho, Aaran, Alfthan, Aromaa, 1994; Knekt, Heliovaara, Aho, Alfthan, Marniemi, Aromaa, 2000; Pattison, Symmons, Young, 2004).

Lower serum levels of vitamin E, beta-carotene, and selenium are associated with an increased risk of RA (Heliovaara et al., 1994; Knekt et al., 2000). Pattison and colleagues (2004) determined that lower intakes of vitamin E and beta-carotene are associated with a modest increase in the risk of arthritis but found no relationship between retinol and selenium intakes and risk of arthritis.

A high intake of antioxidant nutrients, particularly vitamin C, may reduce the risk of cartilage loss and disease progression in individuals with OA; those with the lowest vitamin C intake had a four-fold increased risk. Moderate to high vitamin C intake was associated with a lower risk of developing knee pain associated with OA (McAlindon, Jacques, Zhang,

Hannan, Aliabadi, Weissman, et al., 1996). In a prospective, population based, nested case-control study, Pattison, Silman, Goodson, Lunt, Bunn, Luben, et al (2004) found that a low intake of vitamin C doubled the risk of developing inflammatory arthritis. Individuals who consumed less than 56 mg of vitamin C daily had more than a three-fold increase in risk of developing inflammatory arthritis. In an animal study, Kraus, Huebner, Stabler, Flahiff, Setton, Fink, et al., (2004) found an association between ascorbic acid supplementation and increased cartilage collagen content. However, the study also found that high-doses of ascorbic acid worsened the severity of knee OA, and increased cartilage degradation. The researches recommended that ascorbic acid not be supplemented above the currently recommended dietary allowance.

According to Knekt et al., (2000), higher serum vitamin E level is associated with a decreased risk of RA. Vitamin E may exert a mild anti-inflammatory effect by blocking arachidonic acid formation from phospholipids (Darlington & Stone, 2001). A double blind randomized study, in which 42 patients with RA were treated with vitamin E (Edmonds, Winyard, Guo, Kidd, Merry, Langrish-Smith, et al., 1997) showed a significant decrease in pain parameters including pain in the morning, evening, and after chosen activity. Vitamin E treatment in an animal model of RA showed a beneficial effect on joint destruction (Bandt, Grossin, Driss, Pincemail, Babin-Chevaye, Pasquier, 2002). Since vitamin E does not appear to affect cartilage volume loss or symptoms, it may not have a beneficial effect in knee OA (Wluka, Stuckey, Brand, Cicuttini, 2002).

Greater intake of Vitamin D has also been associated with a lower risk of RA (Merlino, Curtis, Mikuls, Cerhan, Criswell, Saag, 2004) and OA (McAlindon, Felson, Zhang, Hannan, Aliabadi, Weissman et al, 1996). Vitamin D plays an important role in bone metabolism and may reduce the risk of an immunologic disorder (Merlino et al, 2004). Individuals with a low intake of vitamin D are nearly three times more likely to have progression of OA of the knee than those with high intakes (McAlindon et al, 1996).

Very few foods naturally contain vitamin D. Oily fish, such as salmon, mackerel, and sardines are good sources; and cod liver oil is considered an excellent source. Vitamin D fortified foods, e.g., milk, orange juice, some breads and cereals, can contribute to dietary intake. However, more than 90 percent of the vitamin D requirement for most individuals comes from casual exposure to sunlight (Holick, 2004).

Herbal Therapy and Nutritional Supplements

Many people with chronic diseases, including arthritis, are seeking a more natural approach to treating their symptoms. Several are turning to complementary care, including herbal and nutritional supplements, other than vitamins and minerals, for relief.

Glucosamine and chondroitin are two of the most commonly used herbs for the treatment of OA. Glucosamine, a dietary supplement that is proposed to be “disease modifying”, is capable of protecting or restoring cartilage structure, and slowing the development of OA (Oegema, Deloria, Sandy, Hart, 2002). The National Center for Complementary and Alternative Medicine and the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) at the National Institutes of Health are currently funding multi-center, double-blind, placebo-controlled studies on the usefulness of these dietary supplements for OA (NIH Conference, 2000). Previous studies suggest that both supplements are safe, and are moderately effective for reducing pain in knee OA (McAlindon, LaValley, Gulin, Felson, 2000; Reginster, Deroisy, Rovati, Lee, Lejeune, Bruyere, Giacovelli, Henrotin, Dacre, Gossett, 2001).

In a 16-week randomized, double-blind, cross-over study, Najm, Reinsch, Hoehler, Tobis, and Harvey (2004), compared S-adenosymethionine (SAMe 1200 mg) to the non-steroidal anti-inflammatory drug (NSAID) celecoxib (200 mg) in alleviating pain and inflammation, and improving function in patients with knee OA. SAMe was as effective in the management of OA, and subjects had fewer side effects than those taking NSAIDs. According to Najm et al (2004), although SAMe was slower to take effect, it was as effective as celecoxib in the management of knee OA symptoms.

Table 1. Other herbal supplements demonstrating positive outcomes in treatment of osteoarthritis in randomized, controlled trials

Herbal supplement	Positive Outcome	Reference
Articulin – F (Ayurvedic herb and mineral supplement)	Improved pain severity and disability scores.	Kulkarni, Patki, Jog, Gandage, Patwardhan (1991)
Avocado/soybean unsaponifiables (ASU)	Reduced NSAID consumption in knee and hip OA. Improved pain and functional disability in knee and hip OA.	Blotman, Maheu, Wulwik, Caspard. Lopez (1997) Maheu, Mazieres, Valat et al (1998)
Capsaicin cream – applied topically	Reduced pain on physicians' and patients' global scores using visual analog scale and 5-point scale. Reduced pain severity, improved functional capacity and morning stiffness, grip strength, and joint stiffness. Reduced articular tenderness and pain.	Altman, Aven, Holmburg et al (1994) Deal, Schnitzer, Lipstein et al (1991) McCarthy, McCarty (1992) Schinitzer, Morton, Coker, Flynn (1992)
Collagen hydrolysate (pharmaceutical-grade collagen hydrolysate PCH)	Reduced pain in OA of knee and hip.	Moskowitz (2000)
Devil's claw (Harpagophytum procumbens)	Significantly reduced pain. Reduced pain and improved joint mobility.	Guyader (1984) Lecomte, Costa (1992)
Reumalex (mixture of white willow bark, guaiacum resin BHP, black cohosh, sarsaparilla, and poplar bark)	Mild analgesic effect	Mills, Jacoby, Chacksfield, Willoughby (1996)
Stinging nettle leaf (Urtica dioica)	Reduced pain and disability scores within one week.	Randall, Dobbs, Hutton, Sanders (2000)
Willow bark extract (Salix alba)	Moderate analgesic effect	Schmid, Tschirdewahn, Kotter et al (1998)

Table 1 adapted from Long L, Soeken K, Ernst E. Herbal medicines for the treatment of osteoarthritis: a systematic review. Rheumatology. 2001; 40: 779-793; and Little CV, Parsons T, Logan S. Herbal therapy for treating osteoarthritis. The Cochrane Database of Systematic Reviews. 2000; issue 4; Art. No: CD002947. DOI: 10.1002/14651858.CD002947.

Table 2. Selected herbal supplements demonstrating positive outcomes in treatment of rheumatoid arthritis in randomized controlled trials		
Herbal supplement	**Positive outcome**	**Reference**
Capsaicin cream – applied topically	Reduced pain in treatment group.	Deal, Schnitzer, Lipstein et al (1991)
Feverfew	Improved grip strength.	Pattrick, Heptinstall, Doherty (1989)
GLA (gamma linolenic acid) from borage seed oil	Improved joint tenderness and swelling score, improved MD global assessment. Improvement in tender joint count and score, pain, and Health Assessment Questionnaire score.	Leventhal, Boyce, Zurier (1993) Zurier, Rossetti, Jacobson et al (1996)
GLA from black current seed oil	Improved joint tenderness and tenderness score.	Leventhal, Boyce Zurier (1994)
TWH (Tripterygium wilfodii Hook)	Improvement in tenderness, swelling, morning stiffness, and grip strength	Tao, Ying, Dong et al (1989)

Table 2 adapted from Soeken K, Miller SA, Ernst E. Herbal medicines for the treatment of rheumatoid arthritis: a systematic review. Rheumatology. 2003; 42: 652-659.

A number of other herbal supplements including thunder god vine (*Radix triptergyium wilfordii* hook F), ginger (*Zingiber officinalis),* guggulu (B*oswellia serrata*), and curcumin (*Curcuma longa)*, have been used with some success in treating arthritis. Although they appear to be safe, randomized controlled trials have not been conducted to demonstrate efficacy.

Strategies for Prevention

Complementary and Alternative Medicine: Massage, Acupuncture, Chiropractic, Homeopathy for People with Arthritis

In recent years, the use of complementary and alternative medicine (CAM) has gained increasing popularity among the general public and among people with arthritis and other rheumatic conditions. The National Institutes of Health defines CAM in the United States as those treatments and health care practices that are not taught widely in medical schools and not generally used in hospitals. These therapies are also often called "unconventional therapies." The combined offering of CAM and mainstream medicine in health care settings has been called "integrative medicine." For the most part, these therapies have not undergone rigorous scientific analysis, particularly with specific attention to arthritis-related outcomes. However, a growing body of research shows promise for some CAM therapies in the areas of pain management, stress reduction/mental wellbeing, and immune response.

The most popular treatment modalities for people with rheumatoid conditions are chiropractic, acupuncture, massage, and homeopathy. However, definitive conclusions about the prevalence of specific modalities are not possible, due to differing definitions of CAM (Ernst,1998: Ramos-Remus, Gutierrez and Davis, 1999). Many other methods have also been reported. Relatively little research has been conducted with these modalities among people with arthritis.

Massage Therapy

Massage therapy is a manual therapy that may involve a variety of techniques and modalities and can include friction, gliding strokes, tapping, and kneading on the more superficial layers of the muscles, as well as active and passive movement of joints (http://www.amtamassage.org, accessed 09/26/05).

A scientific review of manual and manipulation techniques for rheumatic diseases concluded that, while overall the results were mixed, these techniques appeared to be beneficial for neck and back pain when compared to a placebo or to no treatment. The reviewers concluded that manual and manipulation therapies are useful as adjuncts to a comprehensive treatment plan and are particularly useful for breaking the pain cycle and increasing tolerance for exercise (Fiechtner and Brodeur, 2002).

Field, Hernandez-Reif, Seligman, et al., (1997) trained parents to give massage to their children with rheumatoid arthritis. Compared to children who received progressive muscle relaxation, the massaged children experienced decreased anxiety and decreased cortisol after the first and last sessions, and decreased pain and pain limitations on activities over the one-month period, as reported by the children, their parents, and their physicians.

Sunshine et al., (1997) randomly assigned people with fibromyalgia syndrome to one of three treatments: massage therapy, transcutaneous electrical stimulation (TENS), or transcutaneous electrical stimulation without current (SHAM TENS) for 30-minute treatment sessions two times per week for five weeks. Compared to people receiving TENS or sham TENS, those who received massage reported lower anxiety and depression. Their cortisol levels were lower immediately after the therapy sessions on the first and last days of the study. They also had greater improvement on a measure of pain, and reported less pain, stiffness, and fatigue and fewer nights of difficult sleeping.

Massage would not be expected to change the affected joint per se, but might positively impact mobility through improvement in the surrounding soft tissue, as well as interfere with pain signals, reduce stress hormones, and reduce inflammation (Field, 1998). While the mechanisms for these potential effects are unknown, the Gate Theory of Pain has been suggested to explain pain reduction effects. It suggests that pressure (massage) may alleviate pain because pressure stimuli are received by the brain before pain stimuli are received, thus the pain stimuli is not processed. Additionally, massage appears to increase serotonin

levels, which may inhibit the transmission of pain signals to the brain. Finally, massage may help induce sound sleep and promote the release of somatostatin, thus preventing the release of substance P caused by sleep deprivation. Low somatostatin and high substance P affect pain levels (Field, 1998). The production of substance P due to deprivation of deep sleep has been theorized as affecting pain associated with fibromyalgia (Sunshine et al., 1997). Thus, massage may help people with fibromyalgia by promoting better sleep. Deep massage, however, may be contraindicated when a person with fibromyalgia is experiencing a flare-up of symptoms (Werner, 2002).

Acupuncture

Acupuncture is based in traditional Chinese medicine and involves the placement of needles at strategic points along the body's meridians, or energetic pathways.

A scientific review of acupuncture for osteoarthritis of the knee included seven trials. There was strong evidence for the effectiveness of acupuncture for pain relief, compared to sham acupuncture. For function, the evidence was inconclusive. It was not possible to determine the effectiveness of acupuncture compared to other forms of treatment based on the available research (Ezzo et al., 2001).

A review of acupuncture for the treatment of rheumatoid arthritis found only two studies that met scientific criteria for review (Casimiro, Brosseau, Robinson, Wells, and Tugwell, 2002). In one study, a significant reduction in knee pain was found 24 hours after acunpuncture, compared to the placebo group. In the second study, no effects were found on erythrocyte sedimentation rate, C-reactive protein, visual analog scale for pain, number of swollen or tender joints, general health questionnaire, disease activity scale, or analgesic intake. Based on only these two studies, definitive conclusions about acupuncture's effects on rheumatoid arthritis cannot be drawn.

Acupuncture has been hypothesized to have anti-inflammatory effects. Acupuncture may control the release of neuropeptides from nerve endings and produce vasodilative and anti-inflammatory effects through calcitonine gene-related peptide. Complex interactions with substance P, the pain-reducing impact of beta endorphins, and the balance between pro-inflammatory and anti-inflammatory cytokines have been discussed in regard to acupuncture's potential mechanisms (Zijlstra, van den Berg-de lange, Huygen, and Klein, 2003). The release of endorphins have been documented when acupuncture needles are inserted at strategic points (Casimiro, Brosseau, Robinson, Wells, & Tugwell, 2002).

Chiropractic Treatments

Chiropractice treatments " ... include the adjustment and manipulation of the articulations and adjacent tissues of the human body, particularly of the spinal column. Included is the treatment of intersegmental aberrations for alleviation of related functional disorders (American Chiropractic Association, http://www.amerchiro.org/media/whatis/, accessed 09/26/05)." A search of Medline and PsycInfo databases revealed no studies of chiropractic manipulation's effects among people with arthritis.

Homeopathy

Homeopathy is based on the "principle of similars," which states that a substance will induce a healing response for the specific syndrome, which it has been proven to cause when given to a healthy person in an overdose. The substance is given in a highly diluted form (http://www.homeopathic.com/articles/homeopathy_works.php). This is in opposition to most of allopathic medicine, which gives medication to counteract or oppose the symptom.

Andrade and colleagues conducted a randomized controlled trial to evaluate the effectiveness of homeopathic therapy for rheumatoid arthritis.

Forty-four patients were enrolled in a double-blind trial with placebo. No statistically significant differences in outcomes were found between the treatment and placebo groups (Andrade, Ferraz, Atra, Castro, Silva, 1991). Fisher and Scott (2001) conducted a six month randomized, cross-over, double-blind placebo-controlled

study of homeopathy among 112 patients with rheumatoid arthritis. Fifty-eight patients completed the study. No improvements in pain, Ritchie articular index, duration of morning stiffness or erythrocyte sedimentation rate were found for homeopathy compared to placebo.

Summary

There is little research on the effects of massage, acupuncture, homeopathy, and chiropractic for people with arthritis and other rheumatic diseases. Overall, these approaches do not appear to be harmful, and preliminary findings suggest that massage and acupuncture may be beneficial as part of a comprehensive approach to treatment.

Current Core Capacities in South Carolina

States use Centers for Disease Control and Prevention (CDC) funding to strengthen partnerships with Arthritis Foundation chapters and others, increase public awareness, improve the ability to monitor the burden of arthritis, coordinate activities, and conduct interventions. CDC provides the following levels of program funding:

- *Capacity building funding*
- *Category A funding* allows states to begin building an arthritis program. In 2004, 28 states were funded at this level
- *Category B funding* carries this process further and also allows states to conduct pilot projects to improve the quality of life for people with arthritis. In 2004, eight states were funded at this level.
- *Basic implementation funding* would allow states to further reduce the burden of arthritis by more broadly implementing evidence-based interventions. No states are funded at this level.

Surveillance, Epidemiology, and Prevention Research

"Surveillance is the ongoing and systematic collection, analysis, and interpretation of health data essential to the planning, implementation, and evaluation of public health practice. Surveillance is closely integrated with timely dissemination of these data and their translation into action.

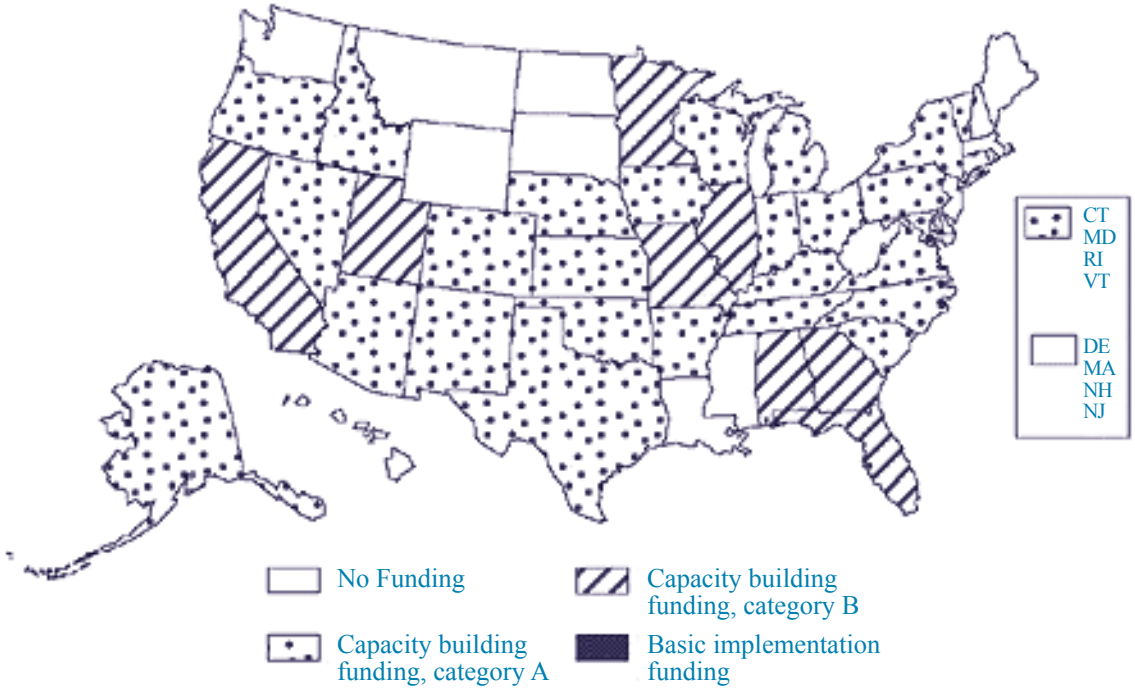
Epidemiology is the study of the distribution and determinants of health-related states or events in specified populations and the application of this study to the control of health problems.

Prevention research is the development and evaluation of interventions designed to prevent onset of or disability from a health problem or condition (NAAP)."

Surveillance

Current South Carolina arthritis surveillance efforts focus almost exclusively on the use of the Behavioral Risk Factor Surveillance Survey (BRFSS) to obtain state-specific prevalence data for arthritis and the impact

Fig. 9. CDC Funding for 36 State Arthritis Programs, Fiscal Year 2004



Current Core Capacities in South Carolina

of arthritis on quality of life and activity limitation. The BRFSS is a random digit-dialed telephone survey of adults age 18 years and older developed by the CDC. The BRFSS is designed to estimate the prevalence of behavioral risk factors and some chronic conditions at the state level. It was first administered in South Carolina in 1984 and is conducted on an ongoing basis each year. It was designed to collect information about the risk factors and risk behaviors related to the major causes of morbidity and mortality in South Carolina. S.C. DHEC, Office of Public Health Statistics and Information Services, oversees the activities of the S.C. BRFSS. Information from the BRFSS is weighted population data, which when analyzed presents a good estimation impact of behavioral risk factors for arthritis (obesity and physical activity), as well as the impact and prevalence of the disease.

South Carolina began administering the Arthritis Module of questions from the S.C. BRFSS in January 2000 as part of a CDC cooperative agreement, "Reducing the Burden of Arthritis and other Rheumatic Conditions." Beginning January 2001, several arthritis questions were included in the core BRFSS questionnaire. The same questions were used as an optional module during years when they were not in the core to achieve continuous surveillance of arthritis both nationally and at the state level. In 2003, an Arthritis Management Module was added, and South Carolina included this module in its state survey. Effective 2005, the Arthritis Module and the Arthritis Management Module are included in the core survey every other year. Arthritis questions are also analyzed in conjunction with the Health-Related Quality of Life Module.

According to the 2004 SC BRFSS, approximately 927,000 (29.7 percent) out of 3,124,000 non-institutionalized adults in South Carolina reported having doctor-diagnosed arthritis. This number cannot be compared to the original 2000 estimate of 906,003 (31.4 percent) out of 2,831,079 adults, as the case definition of arthritis in the BRFSS has changed radically since 2000.

From 1996 to 2001, the case definition included those with doctor-diagnosed arthritis and/or those with chronic joint symptoms and labeled them "arthritis or chronic joint symptoms." Since 2002, CDC, partners, and outside experts have agreed on a new case definition of simply "doctor-diagnosed arthritis." Currently, doctor-diagnosed arthritis is defined as a "yes" answer to the following question: "Have you ever been told by a doctor or other health professional that you have some for of arthritis, rheumatoid arthritis, gout, lupus or fibromyalgia?"

People with chronic joint symptoms but no doctor-diagnosed arthritis, are referred to as having "possible arthritis." CDC recommends that since "possible arthritis" is not a part of the arthritis case definition, it should be a secondary focus and analyzed and reported separately. The history of the changes in BRFSS arthritis questions since their inception can be found on DHEC's arthritis Web site.

Focusing surveillance on people with doctor-diagnosed arthritis allows us to target those we are more certain have arthritis or other rheumatic conditions. They are also more affected by their condition and thus more receptive to interventions. Additionally, this surveillance definition is more comparable with data from the health care system and that reported for other disease-specific programs (e.g., diabetes, heart disease) and easier to adapt to changes in the BRFSS survey being considered for the future. A detailed discussion of the change in case definition can be found on the CDC arthritis Web site: (http://www.cdc.gov/arthritis/data_statistics/case_def.htm).

Additional data sources have been explored in order to expand South Carolina's ability to monitor the burden and impact of arthritis in the state. As of April 2005, the National Hospital Discharge Database is being analyzed for the impact of arthritis hospitalization, as well as possible discrepancies in total knee replacements.

Current Core Capacities in South Carolina

However, as illustrated in the surveillance pyramid, these data may only provide information at the tip of the pyramid and do not capture the majority of patient encounters with the health care system. For example, nationally people with arthritis and other rheumatic conditions accounted for approximately 750,000 hospitalizations and 36 million ambulatory care visits. The S.C. Arthritis Program conducts surveillance activities in accordance with the CDC Arthritis Surveillance Recommendations: http://www.cdc.gov.arthritis/data_statistics/recommendations.htm.

Practical application of arthritis data follows:

- *The Burden of Arthritis in South Carolina* reports - The first Burden Report was published in 2003 using data from 2000 and 2001. The second Burden Report will be published early in 2006. It uses BRFSS and National Hospital Discharge Database data from 2002-2004.
- The DHEC Arthritis Program Web site - The Web site was made available to the public in July 2003. It provides prevalence data, copies of reports, programs and resources for people with arthritis; facts about prevention and management of arthritis, information sources, and links.
- State and Regional Fact Sheets - In July 2005, fact sheets were published and disseminated containing national, state and regional arthritis burden statistics. Using the 2004-2005 information, new fact sheets will be completed by May 2006.
- Additional statistical analyses have been completed using both the National Hospital Discharge Database and BRFSS data for various grants and reports.
- Statistical analyses of historical data and recent data have been analyzed for the State Plan.

Surveillance Pyramid

Data Limitations

The S.C. BRFSS is the primary tool used in the surveillance of arthritis to obtain state-specific prevalence data for arthritis and the impact of arthritis on quality of life and activity limitation. However, there are limitations of the survey. For example, prevalence rates do not represent the entire population because the survey excludes people without telephones and those in institutions (e.g., nursing homes) who may be at high risk of arthritis. There is limited participation due to time and functional capacity required to complete the survey, and data is self-reported.

Additionally, the questions are restricted to "any type" of arthritis, not specific types and restricted to people 18 years of age and older, with no information on children with arthritis.

Furthermore, current data sources do not capture the majority of patient encounters with the health care system. Data from physician encounters are needed to provide information on specific types of arthritis and information on medications and other treatments. Although some sources for these data are available through partnerships as discussed above, data centralization is critical. Without data centralization, data from a variety of sources cannot be linked because of the absence of identifiers and centralization of arthritis data. Therefore, a patient's disease progression and treatment cannot be followed.

Current Core Capacities in South Carolina

Prevention Research

Research on arthritis and other rheumatic conditions in South Carolina is in the formative stages, with the primary focus of research interest based in Clemson University in Clemson, the Medical University of South Carolina (MUSC) in Charleston, and the University of South Carolina (USC) School of Public Health Prevention Research Center in Columbia. At the USC School of Public Health and its Prevention Research Center, researchers have proposed or conducted studies on fibromyalgia and post-traumatic stress syndrome; complementary and alternative medicine; arthritis; mobility, and activity limitation in seniors; physical activity; and nutrition.

Currently, there are three Arthritis Foundation Carolinas Chapter grants awarded to the Medical University of South Carolina in Charleston:

Study entitled: "The role of nitric and eicosanoids in lupus nephritis" which is a five-year grant award. It will run through 2006. The main purpose of the study is to determine how nitric oxide leads to kidney damage in lupus erythematosus patients. It is hoped that this research will help to determine more targeted, less toxic therapies for lupus.

Study entitled: "Targeted complement inhibitors". This is a three-year grant that will run until April 2007. The main purposes of this grant are to investigate the complement-dependent, pathogenic mechanisms of arthritis and to use this information to develop new and strong complement inhibitors for use in arthritis treatment. Targeted complement inhibitors may be a safer and more efficacious treatment for arthritis symptoms.

Study entitled: *"The complement system as a therapeutic target for lupus"* which is a two-year grant award. It will run until 2006. The main purpose of this study is to investigate the function of the complement system in the pathogenesis of lupus and to develop new therapies that will inhibit complement activity only at the site of tissue damage. The study proposes that targeted complement therapy is safer and more efficacious than systemic complement inhibitors.

Fifteen clinical trials are either currently recruiting or in the planning stages in South Carolina. Most of the studies are phase III clinical trials which test the safety and efficacy of drug or intervention treatment in a large patient/ participant sample. With seven studies ongoing for rheumatoid arthritis, scleroderma, osteoporosis and lupus, Charleston is the main area in South Carolina for clinical trial research. Other sites involved in clinical trial research are: Columbia, which has a study involved in hip fracture; Greer with studies in osteoarthritis, and rheumatoid arthritis; and Greenville, which has two ongoing clinical trials for rheumatoid arthritis. Orangeburg is currently recruiting for a fibromyalgia clinical trial.

For further information on arthritis related clinical trials, refer to http://www.clinicaltrials.gov and search for "arthritis, South Carolina."

Health Communication

"Health Communication is the effective transmission of a message from the sender to the receiver. Successful communication depends upon the selection of a message and a delivery strategy that best suits the intended audience. For most public health efforts, the audience includes the general public, people with or at risk of arthritis and their family members, and health professionals (NAAP)."

Printed Materials, Exhibits, and Media Coverage

Since the establishment of the S.C. Arthritis Program, a primary goal has been to increase awareness about the burden of arthritis in South Carolina and the importance of prevention, early detection, and appropriate management of arthritis. To accomplish this goal, brochures, posters, fact sheets, and other educational materials have been developed and disseminated statewide through public health districts, partners,

physician offices, health fairs, conferences, and other events. The program has exhibited its display board with the three-pronged message of prevention, screening, and self-management at numerous statewide and local events.

The media has also been a source of delivering the arthritis message throughout the state. Press releases, public service announcements, ads, and radio interviews have been key strategies to increase awareness and promote arthritis programs. Each year during May, in conjunction with National Arthritis Month, the program has requested and publicized the Governor's proclamation of Arthritis Awareness Month in South Carolina. Media coverage and other health communication activities have been intensified during May to commemorate Arthritis Month.

Resource Lists

State and county resource lists have been developed to educate people with arthritis and potential arthritis about programs and services available to help them. The resource lists consists of:

Rheumatologists

Arthritis Self-Help Course Programs

People with Arthritis Can Exercise (PACE) Classes

Arthritis Foundation Aquatic Programs

Support Groups

National Resources

State and Regional Resources

The resource lists are posted on the program's Web site, distributed at health fairs and other events, and sent to individuals who make inquiries about the program.

Educational Conferences

Another strategy for increasing awareness about arthritis is to offer educational conferences. S.C. Arthritis Program has worked in partnership with the Arthritis Foundation and other organizations to provide the following educational conferences for professionals and people with arthritis:

November 2002 - *Arthritis Awareness Day* conference in Hilton Head co-sponsored with AF Low Country Region, targeting professionals and people with arthritis. More than 100 people attended from various areas of the state.

April 2003 - *Walking Tall Standing Strong*, a fall prevention workshop for professionals sponsored by the University of South Carolina School of Public Health in partnership with S.C. Arthritis Program. Twenty-five people attended the Columbia event.

October 2003 - *Arthritis Awareness Day* conference in Hilton Head co-sponsored with AF Low Country Region, targeting people with arthritis. Approximately 50 people attended.

May 2004 - *Fibromyalgia Symposium* for people with fibromyalgia sponsored by S.C. Arthritis Program , Palmetto Health Prime Times, and Wellspring Resource Center in commemoration of Arthritis Month and International Fibromyalgia Day. More than 200 people attended the Columbia event.

2005 - *AF Low Country Region Monthly Educational Programs* in Hilton Head. S.C. Arthritis Program assisted by printing brochures to publicize the monthly events.

May 2005 - The second *Fibromyalgia Symposium* held in Columbia on complementary and supportive approaches to manage fibromyalgia. One hundred twenty-one people attended.

Social Marketing Campaign: "Physical Activity, The Arthritis Pain Reliever"

In January 2003, the Centers for Disease Control and Prevention released a physical activity campaign to states with arthritis programs. The purpose of the campaign is to encourage people with arthritis to engage in physical activity. Repeated exposure of the importance of physical activity is conveyed through newspaper and radio ads, public service announcements, and distribution of brochures and posters throughout the community. Three levels of communication are mass media, selective audiences, and personal contacts. The campaign was tested in four pilot sites with a 20 percent increase in physical activity in response to something heard/read during the campaign. The targeted population was African Americans and Caucasians.

Pee Dee Campaign, Spring 2003

In spring 2003, the campaign was launched in the

Current Core Capacities in South Carolina

Pee Dee Public Health District: Florence, Darlington, Dillon, Marion, Marlboro, and Chesterfield Counties. Radio and newspaper ads and public service announcements were run in the six-county area, and printed materials were distributed to targeted organizations.

Pee Dee was targeted because of its high prevalence of arthritis and its high rate of activity limitation due to chronic joint symptoms. Overweight, obesity, and lack of physical activity, risk factors for arthritis, were also high in Pee Dee. Another reason for selecting Pee Dee was its capacity for programs and services. It was one of the first areas to offer the Arthritis Self-Help course (ASHC) and had three Arthritis Foundation certified Aquatics programs. Pee Dee Health District had also taken a lead role with the arthritis program since its inception.

Edisto Campaign, Fall 2003

In fall 2003, the campaign was taken to the Edisto Public Health District: Orangeburg, Calhoun, and Bamberg Counties. More than 3,000 brochures were distributed, with consumers taking 1,681 of them. More than 100 posters were distributed to organizations, businesses, and doctors offices.

During this campaign, church bulletin inserts were introduced to reach the faith community. More than 9,000 bulletin inserts were placed in 61 churches to convey the message about physical activity and programs for people with arthritis.

The campaign heightened interest in self-management programs. Immediately following the campaign, eight churches requested the Arthritis Self-Help Course for their members. Since that time, the community has continued to respond favorably to the Arthritis Self-Help Course. More self-help courses have been offered in Edisto than in any other part of the state.

Columbia Campaign, Spring 2004

In May 2004, the campaign was implemented in the greater Columbia area (Richland County and a segment of Lexington County) in conjunction with Arthritis Month. Columbia was selected due to its population density and resources to address arthritis. While programs were available in Columbia, enrollment was low. Therefore, the campaign provided an opportunity to increase response to programs being offered.

A variety of strategies were used to deliver the message: radio and newspaper ads and public service announcements, radio interviews, newsletter articles, and printed material distribution. More than 20,000 brochures and nearly 500 posters were distributed to over 500 locations, including businesses, churches, physician offices, pharmacies, recreation centers, and senior centers. Since church bulletin inserts had been successful Edisto, they were also disseminated in the Columbia campaign. Over 17,000 bulletin inserts were placed in 59 churches.

CDC Evaluation of Columbia 2004 Campaign

CDC conducted an evaluation of the Columbia campaign, gathering data via a community telephone survey at baseline, immediately after conclusion of the campaign, and six months after the campaign. Results suggested that the initial impact of the campaign was minimal. However, results from a six-month follow-up period, were more encouraging. Directional to significant improvements were identified regarding knowledge about how to manage arthritis through physical activity and participation in moderate physical activity. In the six-month follow-up period, there were significant positive changes in the percentage of respondents that agreed that "moderate physical activity can reduce arthritis pain" (87 percent, compared to 73 percent at baseline), "moderate physical activity can be helpful even if done for 10 minutes" (99 percent, vs. 90 percent), and "it is possible to reduce arthritis pain without medication" (65 percent vs. 48 percent). Self-reported participation in moderate physical activity increased from 74 percent in the pre-campaign to 84 percent in the six-month follow-up period. However, there were no significant changes in response to calls to action (e.g., thinking about becoming physically active, talking to a friend or physician about physical activity), between baseline and six-month follow-up.

CDC made the following conclusions and recommendations:

Current Core Capacities in South Carolina

While awareness of arthritis and pain management techniques is fairly high among the target audience, misperceptions of the benefits (or lack thereof) of physical activity are still common, particularly among African Americans. This suggests the need to continue efforts to better educate this audience.

With the abundance of drug-related arthritis communications, the physical activity message needs to be more clearly distinguished in order to be heard.

Despite awareness about messages related to physical activity, specific benefits for arthritis pain management are still not understood by a large portion of the people with arthritis. In order to avoid confusion, the message for people with arthritis to engage in physical activity needs to be clearly understood in terms of benefits specific to people with arthritis, as opposed to general benefits associated with physical activity.

Results show a need for greater campaign penetration, repetition, and time in the market to realize immediate and permanent results. The campaign appears to have had some impact in terms of increasing knowledge. CDC's next step might be to target intermediate goals of helping people with arthritis build confidence to begin engaging in regular physical activity.

Columbia Campaign, 2005

In response to CDC's recommendations, a second campaign was conducted in Columbia in 2005, beginning in May in conjunction with Arthritis Month and extending through July. A three-pronged approach was used during the campaign: 1) Newspaper articles, ads, and radio ads/interviews to reach a wide audience, beyond the city limits into Richland and Lexington Counties, 2) Material distribution to physicians, businesses, and other locations in the downtown area, 3) Targeting six low-income inner city neighborhoods for delivery of health promotion messages through personal contacts and presentations: Martin Luther King, Historic Waverly, Lyon Street, Eva Trezevant, Jones McDonald, and Edgewood. The target population for health promotion messages was people with arthritis in the 45-64 and the 65 and older age groups. The rationale for selecting these age groups was that the prevalence of arthritis increases with age. Furthermore, the 45-64 age group has the highest activity limitation.

One hundred fifty radio ads on four local radio stations, along with public service announcements, and three newspaper ads were run during the campaign. Printed materials were distributed to doctor offices, pharmacies, community centers, office buildings, churches, senior housing, and local businesses: 133 posters to 77 sites; and 2,741 brochures to 70 sites. 9,220 inserts were placed in 35 churches. Thirteen presentations were made to church and community groups in the targeted neighborhoods. As a result of the campaign, seven ASHC classes and a PACE program were scheduled or planned.

SC DHEC Arthritis Program Web Site

In 2002 and early 2003, the program's Web site was under development. In July 2003, the Web site went online. Since then, it been expanded and updated several times. The Web site address is included on all program materials. You can visit the Web site at:

http://www.scdhec.gov/arthritis

Programs

Programs refer to the implementation of evidence-based interventions and the development of resources to prevent and/or reduce the impact of arthritis and enhance quality of life.

When the S.C. Arthritis Program was first funded in 1999, few programs and services were available in the state for people with arthritis and other rheumatic conditions. Consequently, one of the primary goals has been to increase the number and accessibility of programs and services for people with arthritis. In partnership with the Arthritis Foundation, S.C. Arthritis Program has been working to promote and expand three evidence-based programs:

- Arthritis Self-Help Course (ASHC) - (*The name of this program has been changed to the Arthritis Foundation Self-Help Program)*
  A group education program designed to help people with arthritis and other rheumatic

conditions learn and practice the skills needed to help manage their condition. This course builds ones self-confidence in the ability to develop and follow an action plan to improve his or her health. The group setting allows participants to learn from others in the group who may have similar experiences. Some of the topics are: pain management and relaxation; dealing with difficult emotions; developing an individualized exercise program; understanding the role of nutrition in self management; communicating with family and friends; developing a relationship with one's health care team; handling fatigue; problem solving.

- People With Arthritis Can Exercise (PACE) - (*The name of this program has been changed to Arthritis Foundation Exercise Program.)* A land-based exercise program designed specifically for people with arthritis. PACE uses gentle exercises to improve strength and energy level and reduce pain.
- Arthritis Foundation Aquatic Program - A warm-water exercise program designed for people with arthritis and other rheumatic conditions. Water exercise is especially good for people with arthritis, because it does not put excess strain on the joints and muscles.

S.C. Arthritis Program maintains a resource list to promote all three evidence-based programs. However, due to limited resources, priorities were set for capacity building. ASHC and PACE were selected as priorities due to scarcity of both programs in the state. Additionally, the potential for expanding these two programs is greater than for aquatics, since neither program requires a pool. Both ASHC and PACE can be offered in most community settings that are accessible to people with disabilities.

Arthritis Self-Help Course

(The new name is the Arthritis Foundation Self-Help Program.)

The *Arthritis Self-Help Course*, a keystone Arthritis Foundation program, has been a priority for SCAP since its inception. Highlights of the program's growth follows.

2000

- Six locations existed, but only one program was active.
- The first Fibromyalgia Self-Help Course Instructor Training was offered. Ten health department staff members and three volunteers attended the training.

July 1, 2001 - June 30, 2002

- The first Arthritis Self-Help Course Instructor Training was offered, with 15 participants representing all regions of the state.
- Four courses were offered, with 26 participants completing the course (those attending at least 2/3 of the classes).

July 1, 2002 - June 30, 2003

- Challenges were: 1) Resignation of S.C. Arthritis Program Coordinator 2) AF loses program coordinator position 3) Lack of funding for public health districts to offer ASHC.
- Five courses were offered, and 35 participants completed the program.

July 1, 2003 - June 30, 2004

- A new S.C. Arthritis Program Coordinator was hired to continue building capacity for ASHC.
- The ASHC and the modified Fibromyalgia Self-Help Course were combined into a single course. Consequently, trainers in S.C. were no longer qualified, leaving S.C. without a resource to train instructors.
- June 2003, arrangements were made for a trainer from Pennsylvania to offer the first ASHC Train the Trainer program. Three DHEC instructors attended and now serve as resources to train

other instructors in the state.

- The trainer from Pennsylvania also held an ASHC Instructor Training. Seven people attended, five new instructors and two who were updated on the adapted course.
- Mini-grants were offered to public health districts to increase number and reach of courses.
- Twelve courses were offered, with 120 people completing the program.

July 1, 2004 - June 30, 2005

- Limited mini-grant funding curtails expansion of ASHC through public health districts.
- Outreach efforts expanded to other partners with potential to offer the program.
- Two ASHC Instructor Trainings were offered: one in June 2004 with 10 participants and one in May 2005 with nine participants.
- Sixteen courses were offered, reaching 238 people. Of those, 171 completed the program.

Summary

From 2000 through June 30, 2005, a total of 37 ASHC classes were held, with 352 participants completing the program. During the same time period, the S.C. Arthritis Program held five instructor trainings, with 61 participants in attendance, and one Train the Trainer workshop, with three participants attending. As of June 30, 2005, South Carolina had 15 active ASHC programs in 14 counties and 18 active ASHC instructors.

During the next five years, the expansion of ASHC will continue to be a priority. The long-range goal is to make ASHC accessible in all areas of the state to all people with arthritis, regardless of race, ethnicity, geographic location, or income. To achieve this goal, SCAP must strengthen and expand partnerships with organizations able to offer the course in a culturally competent context in localities throughout the state at no charge to participants. Additionally, targeted health communication strategies are needed to increase awareness of the program and its benefits.

People With Arthritis Can Exercise (PACE)

This program is also called the Arthritis Foundation Exercise Program.

Another primary objective is to expand PACE, a physical activity program for people with arthritis. Highlights of PACE's development in South Carolina follows.

1999

No PACE programs in South Carolina when SCAP began.

2000 - 2001

- The first PACE class in South Carolina was offered at The Regional Medical Center (TRMC) in Orangeburg.
- TRMC offered three PACE classes from July 1, 2000 - June 30, 2001.

2001 - 2002

TRMC offered four PACE classes.

2002 - 2003

- August 2002, the first PACE instructor training was held, with eight participants attending.
- Three new PACE programs began: 1) YMCA in Rock Hill (York County), 2) TRMC in Santee (Orangeburg County), and 3) The Arthritis Foundation, Low Country Region, in Hilton Head (Beaufort County).
- SCAP offered three mini-grants to help with public awareness efforts and other costs associated with offering PACE.
- All three programs, as well TRMC program in Orangeburg started in 2001, continue today. Class sizes are small, generally with six to 12 participants.

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- Six PACE classes were completed during the year.
- Challenges faced were: 1) May 2002, the S.C. Arthritis Program Coordinator resigned, leaving a gap in the state's resources. 2) Late in 2002 and in 2003, the Arthritis Foundation, Carolinas Chapter underwent staff turnover and reduction. Due to downsizing, the Arthritis Foundation Carolinas Chapter was unable to help expand programs for people with arthritis.

2004

- S.C. Arthritis Program coordinated with the National Arthritis Foundation to search for a Master Trainer to come to South Carolina.
- In January, the first PACE Instructor Training in South Carolina was offered by a Master Trainer from New York: Sixteen people from five program locations attended.
- In January, the first PACE Train the Trainer in South Carolina was also offered by the Master Trainer: All three certified PACE instructors in the state were trained and now serve as resources for training new instructors.
- In August, a new class began at The Capital Senior Center in Columbia. Due to limited response, only one time-limited program was held.
- In October, SCAP held a second PACE Instructor training. Fifteen people from 11 program locations attended.

2005 (through June 30)

- No new programs have begun since 2004, although SCAP has offered consultation and technical assistance to new instructors.
- Challenges to offering programs included: Instructors' personal reasons, such as family illness; other priorities/other exercise programs being offered by organizations; turnover of staff; and lack of response to scheduled classes.
- In January, Clemson Recreation Center made an attempt to offer PACE, but the response was not sufficient to continue the program. Clemson has a new senior coordinator who plans to offer classes in fall 2005.
- In April and June, two PACE Instructor Trainings were held. Twenty-five people attended, 12 from S.C. PACE Senior Project (reference Innovative Approaches below) and six from other organizations in the Pee Dee area and Columbia.
- From July 1, 2004 - June 30, 2005, 12 PACE classes were completed.
- The Capital Senior Center began another class in June, with SCAP's help to increase public awareness.

Innovative Approaches

Because there have been many challenges to expanding PACE, S.C. Arthritis Program has been seeking innovative approaches to deliver the program. An opportunity arose when the Chronic Disease Directors, with support from the Centers for Disease Control and Prevention (CDC) and the Administration on Aging (AOA) and in collaboration with the and the National Association of State Units on Aging (NASUA), announced the SENIOR (State-Based Examples of Network Innovation, Opportunity, and Replication) grants program. This program provides funding to implement health promotion and disease prevention programs for older adults at the state and/or local level. S.C. DHEC and the Lt. Governor's Office on Aging applied for SENIOR grant funding to expand PACE to Bamberg and Marion counties, two rural, underserved areas of the state.

In January 2005, funding was awarded for the S.C. PACE Senior Project, a partnership between DHEC, the Lt. Governor's Office on Aging, and their local units (Area Agencies on Aging, Councils on Aging, and local

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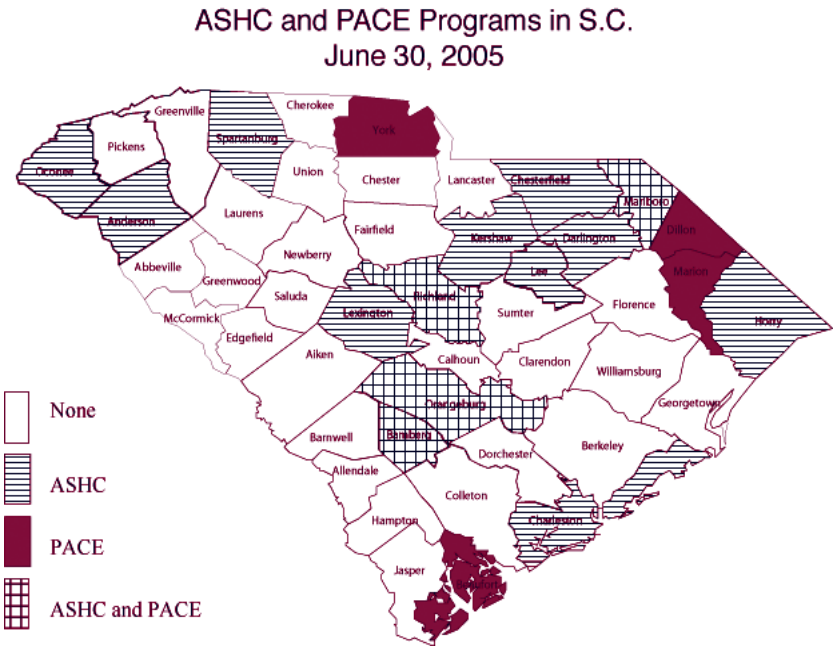
health departments), the Arthritis Foundation, minority churches, and Clemson University.

Both counties funded by the grant have large African American populations for people 65 years of age and older, and both are in dire need of PACE due to their high prevalence of arthritis and risk factors for arthritis. Local partnerships, which have already been established, are being strengthened and expanded during the project. The key point of entry is through African American churches. State and local partners are helping to publicize PACE in both counties through the media and personal contacts to increase awareness and enroll participants.

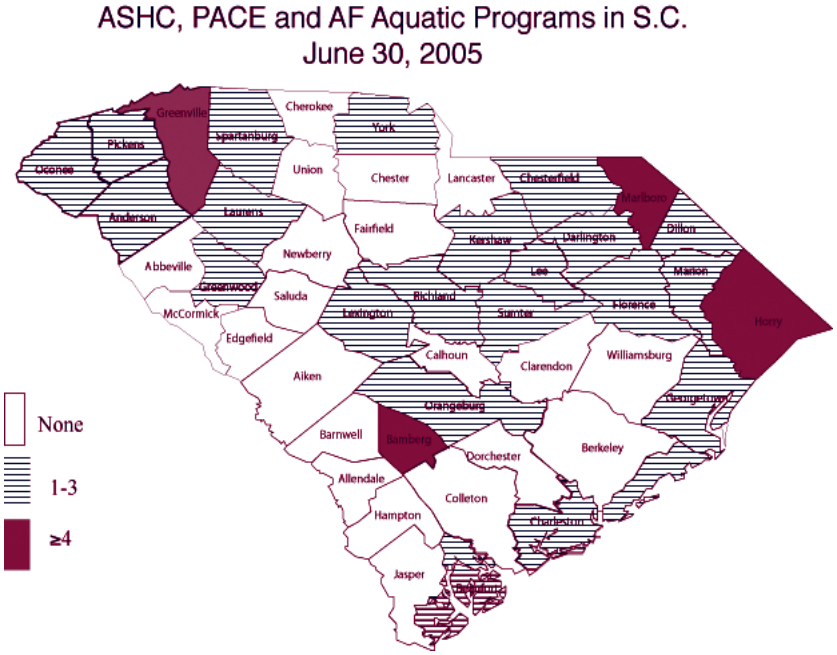
Both Bamberg and Marion are enthusiastic about the program, and results are promising. The two counties started their first series of PACE classes in June 2005, and additional classes are planned for the near future.



Summary

SCAP has made progress in building capacity for PACE in South Carolina, but there is still much work to do. As of June 30, 2005, the state has 13 active PACE programs in eight counties (programs that have offered a class within the past year or have a class scheduled). The state has 21 active PACE instructors, four back-up instructors, and three PACE trainers. A total of 32 PACE classes were held from July 1, 2000 through June 30, 2005.

The South Carolina Arthritis Program will continue to offer instructor trainings and consultation and assistance to PACE instructors to help develop new programs and support existing ones. While building capacity in rural areas has been a great challenge, a new initiative, the S.C. PACE Senior Project, is underway in two rural communities. Lay educators have been trained as instructors in this community-based project that builds upon existing relationships among African American churches, the public health department, and the aging network. The S.C. PACE Senior



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Project will be evaluated as a potential model for replication in other underserved areas of the state.

Policies and Systems

Policies refer to advocacy directed toward legislation, regulations, guidelines, and practices for the establishment of an environment conducive to prevention. Policies are at the national, state and community levels are all important to effect environmental change.

Systems refer to the creation of a health infrastructure "required to operate and manage effective prevention programs (NAAP)." Collaboration among state and private organizations, consumer groups, health care providers, and other interested groups is required to address arthritis.

Partnerships

Collaboration, cooperation, and a shared vision are essential to accomplishing program goals. Since its inception, the South Carolina Arthritis Prevention and Control Program has worked in partnership the Arthritis Foundation and other organizations throughout the state to reduce the burden of arthritis in South Carolina. One of the first actions of the program was the formation of a Steering Committee, which joined together representatives from the Arthritis Foundation, hospitals, the private sector, state agencies, research centers, universities, and consumer groups to set the direction for the program. The Steering Committee developed the *State Plan for Arthritis Action in South Carolina, 2000-2005*, the first state document providing a public health response to address arthritis. Later, the Steering Committee was transitioned into the S.C. Arthritis Advisory Council, which provides ongoing guidance and direction to the program.

In addition to Advisory Council activities, the program relies on partnerships to carry out all aspects of its plan for action. The program has partnered with the Arthritis Foundation Carolinas Chapter, the University of S.C. Arnold School of Public Health, Palmetto Baptist Prime Times, and Wellspring Resource Center to offer educational conferences.

It coordinates with numerous local and state groups to display at health fairs and other events and to disseminate printed materials throughout the state to increase awareness about arthritis. It works in collaboration with many organizations, such as the YMCA, the aging network, senior centers, community centers, parks and recreation, local public health departments, primary health care centers, hospitals, and parish nurses to expand self-management programs. Currently, the program is partnering with the Lt. Governor's Office on Aging, Clemson University, local Councils on Aging, Area Agencies on Aging, and the African American faith

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community in Bamberg and Marion counties to establish PACE programs in these two underserved counties.

This chapter lays the framework for action, reviews progress during the past five years, delineates priorities for the next five years, and sets forth objectives and strategies to reduce the burden of arthritis in the state. The chapter is divided into four sections. The first section provides the mission, long-term goals, and core values of the program. The second section summarizes "where we are now:" progress made in achieving each objective established in the previous five-year plan. The third section addresses priority setting for the next five years. The final section contains the plan of action that will determine the direction of arthritis-related activities for the next five years.

Framework for Action

Mission

Building statewide partnerships to reduce the impact of arthritis in South Carolina.

Overarching Long-Term Goals

To reduce the burden of arthritis in South Carolina.

To reduce disability and pain due to arthritis and arthritis-related conditions.

To empower South Carolinians affected by arthritis to achieve optimal health status and enhanced quality of life.

Core Values of the National Arthritis Action Plan

•*Use and expand the science base.* Decision making must be data driven, and research and demonstrations that enhance our scientific knowledge must be encouraged and supported.

•*Emphasize prevention.* Primary, secondary, and tertiary prevention of arthritis must be the main thrust of the initiative.

•*Build partnerships.* No one organization can effectively address arthritis. Strong partnerships must be built among the medical, voluntary, and public health communities to ensure a coordinated, united effort. Only through the collective energy of an interdisciplinary approach can we truly reduce the arthritis burden.

•*Seek social equity.* The unique issues affecting the uninsured, the underinsured, the poor, the disabled, the poorly educated, the unskilled workforce, minority populations and other vulnerable groups must be understood and addressed.

Where we are now: Progress during the first five years

The South Carolina Arthritis Program has been in place for five years. Much progress has been made in surveillance, health communication and awareness, and providing services to people with arthritis, in accordance with the goals of the initial plan. This section contains a summary of the progress made for each objective in the original State Plan. More detailed information can be found in the Core Capacities section of this report.

Objective 1. Conduct comprehensive needs assessment to identify current resources, services, and gaps by September 15, 2003.

Status - Met

The needs assessment was conducted in 2002 with a final report dated June 2002. In partnership with the Arthritis Foundation Carolinas Chapter, the South Carolina Arthritis Program contracted with the University of South Carolina Arnold School of Public Health Prevention Research Center to conduct a needs assessment of people with arthritis. The purpose of the assessment was to gather information that would provide guidance for development of the statewide arthritis program. The objective was to determine needs of people with arthritis related to information, resources and services, and quality of life. Five focus groups were conducted, two fibromyalgia groups, two osteoarthritis/ rheumatoid arthritis groups, and one lupus group.

A summary report of the needs assessment can be found in the section, "Lessening the Burden" and on the S.C. Arthritis Program Web site.

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Objective 2. Continue arthritis surveillance and expand means to measure burden of arthritis on people of South Carolina.

Status – Met

Surveillance for both arthritis burden and later, in 2004, arthritis management has been ongoing using the Behavioral Risk Factor Surveillance Survey (BRFSS). In addition to core questions pertaining to symptoms and pain of arthritis, questions about activity limitation, work limitation, and quality of life have been asked. The CDC Arthritis section of the BRFSS was used in its entirety 2001-2004 and is currently being used in 2005. Additionally, the arthritis management module was used in 2004 and is currently in use in 2005. Analysis of the 2004 BRFSS data for arthritis has been completed; the analysis on the 2005 data will begin in March 2006.

The information from the BRFSS is weighted population data, which when analyzed presents a good estimation of the impact of behavioral risk factors for arthritis (obesity and inadequate physical activity), as well as the impact and prevalence of the disease.

Additional data sources have been explored to expand South Carolina's ability to monitor the burden and impact of arthritis in the state. As of April 2005, the National Hospital Discharge Database is being analyzed for the impact of arthritis hospitalization, as well as possible discrepancies in total knee replacements.

Data has been used and communicated through a variety of methods, including the following:

- *The Burden of Arthritis in South Carolina* reports - The first Burden Report was published in 2003 using data from 2001 and 2002. The second Burden report will be published by early in 2006.
- The DHEC arthritis program Web site - The Web site went online in July 2002. This site serves as an interim burden report in an electronic format. It is kept up to date yearly as data is analyzed.
- State and regional fact sheets - The first state fact sheet, containing national and state data, was developed and disseminated in 2001. In July 2005, information was published containing national, state and regional arthritis burden statistics for 2002-2004.
- Additional statistical analyses - Both the National Health Interview Survey and BRFSS data have been used for various grants and reports.
- Presentations - SCAP staff have been provided a number of presentations to professional groups to educate them about the burden of arthritis in South Carolina.
- The CDC "arthritis wheel" - This tool, which contains prevalence data for each state, has been disseminated widely.

Objective 3. Develop and expand services to people with arthritis.

In partnership with the Arthritis Foundation and many organizations throughout the state, the S.C. Arthritis Program has been working diligently to expand and increase access to programs for people with arthritis in South Carolina. The S.C. Arthritis Program's primary focus has been to expand two proven Arthritis Foundation programs: the Arthritis Self-Help Course (ASHC) (later called the Arthritis Foundation Self Help Program), a group education program for people with arthritis and People with Arthritis Can Exercise (PACE) (later called the Arthritis foundation Exercise Program), a land-based exercise program.

From 2000 through June 30 2005, SCAP offered five ASHC instructor trainings with 50 people in attendance and one "train the trainer" workshop, with three people attending. Thirty-seven courses have been offered in South Carolina, with 352 people completing the course. As of June 30, 2005, there were 15 active programs (programs that have offered a class within the past year, have one in progress, or have one scheduled) available in 14 counties and 18 active trained instructors who lead the course.

The S.C. Arthritis Program has offered a total of five PACE instructor trainings with 64 participants and one train the trainer workshop, with three participants.

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As of June 30, 2005, SC had three trainers, 21 active instructors, and four back-up instructors. From July 1, 2000 through June 30, 2005, 32 PACE classes were held in South Carolina. As of June 30, 2005, the PACE program was available in eight counties and 13 locations.

In addition to working with traditional partners, DHEC is also building partnerships with faith-based organizations and the aging network to build capacity, particularly in rural areas of the state. Lay people are being trained to offer PACE in churches, senior centers, and other community settings that reach people with arthritis. The PACE Senior Project in Marion and Bamberg Counties is a successful example of this approach (reference Current Core Capacities in S.C., page 7).

The S.C. Arthritis Program has also worked to encourage the development of support groups and to increase awareness about them so that people with arthritis can benefit from the support of others. A resource list of support groups in the state was developed and has been disseminated through the program and its partners. Support group information is also posted on the Web site. As of June 30, 2005, there were 19 support groups for people with arthritis in the state.

To address the needs of caregivers of people with arthritis, the S.C. Arthritis Program is involved in the Caregiver Coalition of S.C., a coalition developed in 2004 specifically to address caregivers. For more information about the coalition, contact American Association of Retired Persons (AARP), South Carolina Chapter.

Objective 4. Develop multi-faceted public education and awareness campaign about arthritis by September 30, 2005.

Status: Met

The following methods have been used to increase awareness about arthritis:

- Disseminating printed materials on a statewide basis: brochures, posters, fact sheets, and other educational materials through public health districts, partners, physician offices, health fairs, and other events.
- Exhibiting the S.C. Arthritis Program display board to convey the three-pronged message of prevention, screening, and self-management at numerous statewide and local events.
- Using the media as a source for delivering the arthritis message throughout the state. Press releases, public service announcements, ads, and radio interviews have been key strategies to increase awareness about the S.C. Arthritis Program, self-management programs, and the importance of physical activity.
- Conducting the CDC "Physical Activity Campaign," a social marketing campaign to promote physical activity among people with arthritis, in selected areas of the state.
- Commemorating National Arthritis Month. Each year, the S.C. Arthritis Program has requested and publicized the Governor's proclamation of Arthritis Awareness Month in South Carolina. Media coverage and other health communication activities have been intensified during May to commemorate Arthritis Month.
- Developing and disseminating state and county resource lists to educate people with arthritis and potential arthritis about programs and services available to help them. Resource information is also posted on the Web site.
- Developing a Web site to increase awareness about arthritis and placing the Web site address on all program materials.

Objective 5. By September 30, 2004 create information systems to improve access to arthritis services.

Status: Met

In July 2003, the S.C. Arthritis Program Web site (http://www.scdhec.gov/arthritis) went online. Topic areas are: information about the program and its goals, facts and figures, prevention, screening, self-management, partnerships, State Plan, Advisory Council, resources, and links to the Arthritis Foundation and CDC Web sites. A state map is provided with a listing of rheumatologists, self-management programs, and support groups and public health department contacts for each county.

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Originally, having a toll-free phone number was a program goal. However, due to limited resources, it was determined that it would be more effective to handle calls locally. A public health department contact was assigned for each county, and the contact information is posted on the Web site. For campaigns and special events, DHEC's toll-free Careline phone number has been posted on materials.

The S.C. Arthritis Program has worked in partnership with the Arthritis Foundation and other partners to co-sponsor conferences for people with arthritis and for professionals. Five major conferences have been held, along with numerous other community presentations.

Objective 6. Develop a statewide coalition by September 30, 2002.

Status: Partially Met

Program plans for partnering with the Osteoporosis Coalition were diverted when the coalition was discontinued. However, the program has continued to work diligently to strengthen and expand partnerships. In May 2002, the original S.C. Arthritis Program Steering Committee was transitioned into the S.C. Arthritis Advisory Council. The overriding purpose of the Council is to offer guidance and support regarding the future direction of the state program toward the the ultimate goal of reducing the burden of arthritis in South Carolina. The S.C. Arthritis Program continues to work toward increasing the Council's membership and involving partners in all aspects of the program. Ultimately, the aim is to develop a statewide coalition, and this objective will be continued in the State Plan for Arthritis Action 2000-2005.

Setting Priorities for the Next Five Years

It is not possible that everything can be accomplished at once with existing resources. To determine priorities for the next five years for the State Plan for Arthritis Action in South Carolina, the *Healthy Plan-it*, a tool for planning and managing public health programs was used. The Sustainable Management Development Program (SMDP) at the CDC developed the tool in 1992. It has been used for many years to train county and state public health department program managers in the United States.

Methodology

Basic Priority Rating System

The method called the *Basic Priority Rating System* was used to set priorities for the *Arthritis Plan of Action* for the next five years. This method is a decision-making model comprised of three components: the size of the problem, seriousness of the problem, and the effectiveness of available interventions.

The components are used in a formula that generates a numerical score, which can be used for ranking the priority of health problems. The problem with the highest scores is ranked as the top priority for each of the three components.

Component A - Size of the Problem

The scoring for the size of the problem is based on how much of the population is directly affected, which may be considered either in terms of the entire population or a selected target population.

Component B - Seriousness

This score is determined considering factors, such as:

- Urgency: emergent nature of the problem; importance relative to the public;
- Severity: premature mortality, years of potential life lost; disability;
- Economic loss: to the community, city or state;
- Involvement of others: potential impact on populations or individual family groups.

The seriousness of a health problem is considered more important than the size of the problem. In the case of arthritis, factors, such as limitation of daily activities, self-rated health status and depression, may be considered as ways to determine seriousness.

Component C - Effectiveness of Intervention

This is the most important component for priority stetting. Interventions are rated on a scale from very effective to entirely ineffective.

After the Basic Priority Rating was determined, other factors were considered: propriety, economic feasibility, acceptability, resources, legality (**PEARL**).

- **P** – Propriety: Is it your agency's responsibility?
- **E** – Economic feasibility: Does it make economic sense?
- **A** – Acceptability: Will the community accept it?
- **R** - Resources: Is funding available?
- **L** – Legality: Is the program legal?

Results

Public Health Priorities for Arthritis

Because there are more than 100 different types of arthritis, it is not possible to focus on every one of them. While the South Carolina Arthritis Program will continue its efforts to reach people with arthritis, regardless of what type they have, it was necessary to determine priorities for the *Plan of Action* for the next five years. Using the *Basic Priority System,* the following priorities were established:

- Osteoarthritis,
- Rheumatoid Arthritis,
- Lupus,and
- Fibromyalgia.

Osteoarthritis was selected as the top priority for the *State Plan of Action* because it affects more people than other forms of arthritis and because it is highly preventable and responsive to interventions.

Setting Priorities for the Next Five Years

Strategic Approaches to Address Priorities:

- ***Surveillance and epidemiology***, using scientific tools for the collection, analysis, interpretation, and dissemination of data for planning, implementation, and evaluation; identifying gaps in knowledge and ways to address them; and practical application of data;
- ***Health Communications***, increasing arthritis awareness via printed materials, the media, Web site, presentations, targeted campaigns, educational forums, health fairs and other events;
- ***Programs,*** expansion of effective interventions for people with arthritis and resources to enhance quality of life;
- ***Policies and Systems***, partnership building and advocacy.

Where We Want to Go: Plan of Action 2005 – 2010

Surveillance

Goal

1 Generate a complete picture of the scope of arthritis in South Carolina; and identify disparities among adult populations by age, gender, race, socio-economic status and geographic area (urban versus rural).

Objective

1.1 Develop and update a comprehensive surveillance and data work plan every two years that continually assesses and evaluates existing data sources and methods and adds new data sources to fill identified gaps through 2010.

Strategies

1.1a. Identify Healthy People 2010 arthritis-related objectives, and develop a plan to collect data that will enable the SCAP to monitor those objectives.

1.1b. Make recommendations for existing, revised and/or new data collection systems, instruments, measures and collaborations that will validate existing data, identify gaps, and eliminate overlap.

1.1c. Utilize the BRFSS survey as the primary source for obtaining state-specific prevalence data for arthritis, the impact of arthritis on quality of life and activity limitation, and arthritis management.

1.1d. Incorporate hospital discharge data as a secondary source for arthritis surveillance for the purpose of tracking knee replacements.

1.1e. Explore the feasibility of collecting S.C. data to differentiate types of arthritis, i.e. osteoarthritis, rheumatoid arthritis, fibromyalgia and lupus.

Objective

1.2 Identify disparities in arthritis prevalence in different populations every two years, specifically in core target groups through 2010.

Strategies

1.2a. Identify disparities in quality of life related to arthritis in different populations.

1.2b Identify disparities in the diagnosis and treatment of arthritis (such as joint replacement) in different populations.

1.2c. Determine attributable risk factors and quantify the impact of arthritis on disability and quality of life, especially with respect to disparate populations.

Goal

2 Use data to increase awareness of arthritis and its impact in South Carolina, to target and evaluate interventions, and to advocate for programs and services for people with arthritis.

Objective

2.1 Develop and disseminate updated reports every two years to increase awareness of arthritis, its impact, and prevention and management approaches to address arthritis through 2010.

Strategies

2.1a. Develop and disseminate "The Burden of Arthritis in South Carolina" report.

2.1b. Develop and disseminate state and regional fact sheets to increase awareness of arthritis, its impact, and prevention and management strategies.

2.1c. Post reports on DHEC's Arthritis and Chronic Disease Epidemiology Web sites.

Where We Want to Go: Plan of Action 2005 – 2010

Objective

2.2 Develop annual reports on the reach and impact of evidence-based programs.

Strategies

2.2a. Continue to emphasize the importance of data collection at instructor trainings.

2.2b. Collaborate with partners to collect data on ASHC and PACE: reach, number of completers, and pre-and post course data.

2.2c. Validate, compile and analyze data, and create reports.

2.2d. Coordinate with the Arthritis Foundation to capture data for the Arthritis Foundation Aquatics Program.

2.2e. Develop a plan for evaluating new programs to address arthritis.

Health Communication

Goal

3 Increase professional and public awareness and knowledge of arthritis related to prevention, early diagnosis, appropriate management, and programs and services to address arthritis.

Objective

3.1 Provide statewide educational conferences targeting professionals and people with arthritis annually through 2010.

Strategy

3.1a. Form a committee to plan and coordinate the annual conference.

Objective

3.2 Provide education and printed materials about evidence-based programs and available resources to every S.C. rheumatologist, other key physicians, nurse practitioners, and allied health professionals by spring 2008.

Strategies

3.2a. Network with partners to disseminate information.

3.2b. Seek guidance from the Advisory Council health communication workgroup.

Objective

3.3 Continue to display and disseminate arthritis materials statewide through 2010.

Strategies

3.3a. Recruit volunteers to assist with disseminating and displaying information.

3.3b. Collaborate with partners (Advisory Council, aging network, faith-based organizations, public health regions, and others) to disseminate materials.

Objective

3.4 Hold community presentations about arthritis in all four regions of the state (targeting low-income and underserved populations) by fall 2007.

Strategies

3.4a. Convene the Advisory Council health communication workgroup to develop a plan for expanding community education.

3.4b. Collaborate with the Arthritis Foundation to develop a speaker's bureau for community education programs.

3.4c. Establish partnerships with health care organizations (hospitals, community health centers, rehabilitation centers, etc.) interested in reducing the impact of arthritis.

3.4d. Network with faith-based organizations, the aging network, and other partners.

Objective

3.5 Increase media coverage and number of activities for "Arthritis Awareness Month" annually, and provide coverage of special events, programs, and activities as they occur through 2010.

Where We Want to Go: Plan of Action 2005 – 2010

Strategies

3.5a. Coordinate with DHEC media relations and partners for media coverage.

3.5b. Request the Governor's proclamation of May as Arthritis Awareness Month.

3.5c. Collaborate with the Arthritis Foundation, the Advisory Council, and other partners to plan events.

Objective

3.6 Continue to expand and improve user-friendliness of the Arthritis Web site and promote use of the Web site as a central point of access for arthritis information in South Carolina through 2010.

Strategies

3.6a. Convene a workgroup to provide guidance on expansion and promotion of the Web site.

3.6b. Develop and conduct a campaign to promote use of the Web site.

3.6c. Coordinate Web site revisions with DHEC's webmaster, and SCAP and epidemiology staff.

PROGRAMS

Goal

4 Expand and increase access to effective programs and services for people with arthritis.

Objective

4.1 Triple the number of active ASHC and PACE instructors and trainers, with at least one trainer in each of the four regions of the state, in South Carolina by 2010.

Strategies

4.1a. Collaborate with the Arthritis Foundation to provide trainings for instructors and trainers.

4.1b. Develop a list of contacts to recruit instructors, including YMCA's, support groups, parks and recreations, faith-based organizations, the aging network, hospitals, and community health centers.

4.1c. Seek funding opportunities (e.g., mini-grants, scholarships) to expand trainings.

Objective

4.2 Triple the number of ASHC and PACE programs, with at least one program in each county, and triple the number of people reached by 2010.

Strategies

4.2a. Provide instructors with consultation, technical assistance, and networking opportunities.

4.2b. Establish effective health promotion strategies.

4.2c. Expand and strengthen relationships with faith-based organizations, the aging network, health and recreation centers, and other partners.

Objective

4.3 Increase the number of Arthritis Foundation Aquatic programs and reach in South Carolina by 2010.

Strategies

4.3a. Collaborate with the Arthritis Foundation and other partners to promote the AF Aquatic Program and to measure the reach.

Objective

4.4 Expand the array of evidence-based programs offered to people with arthritis in South Carolina by 2010.

Strategies

4.4a. With CDC's guidance, form partnerships to offer new evidence-based programs.

Objective

4.5 Improve access to underserved groups and populations who are disproportionately at risk for arthritis or related disability: people of

Where We Want to Go: Plan of Action 2005 – 2010

lower SES, women, minorities, and people in rural areas of the state by 2010.

Strategies

4.5a. Network with the aging network, African American faith-based organizations, community organizations and leaders, and other partners to target underserved population groups.

4.5b. Continue to seek commitment of partners to provide programs at low/no cost.

4.5c. Use a community-based approach to deliver programs to underserved groups.

4.5d. Develop effective health promotion strategies to reach targeted populations.

POLICIES AND SYSTEMS

Goal

5 Strengthen and expand partnerships to establish a comprehensive, diverse, statewide infrastructure to address the impact of arthritis in South Carolina.

Objective

5.1 Expand the Advisory Council to develop a diverse, statewide coalition, with active members in all four regions of the state by 2010.

Strategies

5.1a. Add Hispanic/Latino representation to the Advisory Council.

5.1b. Strengthen and expand partnerships with the aging network, faith-based organizations, state agencies, physicians, allied health professionals, hospitals, community health centers, parks and recreation, and other community organizations.

5.1c. Increase collaboration with chronic disease and injury prevention programs and public health region contacts.

5.1d. Strengthen and expand alliances with organizations that focus on weight management and physical activity.

5.1e. Evaluate the feasibility of developing regional councils.

Goal

6 Advocate for increased resources and funding for programs and services to address the prevention of arthritis and related disability.

Objective

6.1 Develop and evaluate a public policy action plan for increasing South Carolina's decision makers' awareness of arthritis as public health issue by 2010.

Strategies:

6.1a. Utilize arthritis reports and fact sheets to educate key decision makers about the human and economic impact of arthritis in S.C.

6.1b. Maintain a policy and partnership workgroup within the S.C. Arthritis Advisory Council.

6.1c. Keep partners informed of proposed policies at the national level.

6.1d. Identify strategies for increasing S.C. decision makers' awareness of arthritis as a public health problem.

6.1e. Identify a key decision maker as a champion for promoting the prevention of arthritis and related disability.

Objective

6.2 Build alliances with health insurance providers and managed care organizations by 2010.

Strategies:

6.2a. Explore the potential of including arthritis as a component in the "Welcome to Medicare" exam in South Carolina.

6.2b. Educate health insurance providers and managed care organizations about the burden of arthritis and explore funding opportunities for the management of arthritis risk factors and related disabilities.

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Appendices

Healthy People 2010 Objectives

Chapter 16. Arthritis, Osteoporosis, and Chronic Back Conditions

1. Increase mean days without severe pain for U.S. adults with arthritis to more than 20 of the past 30 days. (Baseline: 16.0 days in 1995)

2. Reduce to no more than 15 percent the proportion of people with arthritis who experience a limitation in activity due to arthritis. (Baseline: 18.4 percent in 1990)

3. Reduce the proportion of all people with arthritis who have difficulty in performing two or more personal care activities, thereby preserving independence.

4. Increase the proportion of people with arthritis aged 18 and older who seek help in coping with personal and emotional problems.

5. Increase the proportion of the working-age population with arthritis who desire to work (i.e., both those who are employed and those who are unemployed but looking for work, called the labor force participation rate) to 60 percent. (Baseline: 45 percent in 1994)

6. Reduce racial differences in the rate of total knee replacement for severe pain and disability.

7. Decrease to 5 percent the proportion of individuals who report they have arthritis but have not seen a doctor for it. (Baseline: 16.4 percent in 1990)

8. Increase the early diagnosis and appropriate treatment of individuals with systemic rheumatic diseases.

9. Increase the proportion of people with arthritis who have had effective, evidence-based arthritis education (including information about community and self-help resources) as an integral part of the management of their condition.

10. Increase the proportion of hospitals, managed care organizations, and large group practices that provide effective, evidence- based arthritis education (including information about community and self-help resources) as an integral part of the management of their condition.

11. Increase the proportion of overweight people with arthritis who have adopted some dietary practices combined with regular physical activity to attain an appropriate body weight.

Chapter 1. Physical Activity and Fitness

12. Increase to 85 percent the proportion of people aged 18 and older who engage in any leisure time physical activity. (Baseline: People with arthritis symptoms—65 percent in 1991; People without arthritis symptoms—72 percent in 1991)

13. Increase to at least 30 percent the proportion of people aged 18 and older who engage regularly, preferably daily, in sustained physical activity for at least 30 minutes per day. (Baseline: People with arthritis symptoms—21 percent in 1991; People without arthritis symptoms—22 percent in 1991)

14. Increase to at least 25 percent the proportion of people aged 18 and older who engage in vigorous physical activity that promotes the development and maintenance of cardio-respiratory fitness three or more days per week for 20 or more minutes per occasion. (Baseline: People with arthritis symptoms—11 percent in 1991; People without arthritis symptoms— 16 percent in 1991)

Chapter 2. Nutrition

15. Increase to at least 60 percent the prevalence of healthy weight (defined as a BMI equal to or greater than 19.0 and less than 25.0) among all people aged 20 and older. (Baseline: males and females with and without arthritis)

16. Reduce to less than 15 percent the prevalence of BMI at or above 30.0 among people aged 20 and older. (Baseline: males and females with and without arthritis)

Appendices

Arthritis Resource Table for SC
Number and Type of Resources by County
June 30, 2005

County	Rheumatologists	AF Aquatics	PACE	ASHC	Support Groups
Abbeville					
Aiken	1				
Allendale					
Anderson	1	1		1	1
Bamburg			3	1	
Barnwell					
Beaufort	3*		1		1
Berkeley					
Calhoun					
Charleston	19*	1		1	1
Cherokee					
Chester	1				
				1	
Clarendon					
Colleton					
Darlington				1	
Dillion			1		
Dorchester					
Edgefield					
Fairfield					
Florence	3	1			3
		1			
Greenville	7	4			4
Greenwood	1	1			
Hampton					
Horry	4	3		1	
Jasper					
Kershaw				1	1
Lancaster	1				
Laurens		1			
Lee				1	
Lexington	1			1	
Marion			2		
Marlboro			2	2	
McCormick					
Newberry					
Oconee				1	
	1		2	1	1
Pickens		1			1
Richland	7	1	1	1	3
Saluda					
	2	2		1	1
Sumter	1	1			1
Union					
York	2	1	1		1
Total in SC	54	19	13	15	19

NOTE - Shading indicates that no resources exist in the county. For ASHC, PACE and Aquatics, numbers indicate active programs. Active = Programs that have offered a class within the past year, have one in progress, or have one scheduled. For programs that offer classes in more than one county, each county served is counted as a separate resource.

** One rheumatologist practices in both Beaufort and Charleston counties, so was included in the count for each of these two counties. However, he was counted only one time for the total.*

Appendices

Number of ASHC Classes and Course Completers* in SC by County
July 1, 2000 - June 30, 2005

County	July 01- June 02	July 02- June 03	July 03- June 04	July 04 – June 05
Aiken	Classes: 1 Completers: 7			
Anderson		Classes: 1 Completers: 4	Classes: 2 Completers: 26	
Bamburg				Classes: 3 Completers: 46
Calhoun				Classes: 1 Completers: 13
Charleston			Classes: 1 Completers: 9	
Chesterfield	Classes: 1 Completers: 6	Classes: 1 Completers: 8	Classes: 1 Completers: 7	Classes: 1 Completers: 8
Florence		Classes: 1 Completers: 8		
Horry		Classes: 1 Completers: 5		Classes: 2 Completers: 13
Kershaw				Classes: 1 Completers: 9
Oconee		Classes: 1 Completers: 10		
Orangeburg			Classes: 7 Completers: 71	Classes: 6 Participants 65
Richland	Classes: 2 Completers: 3		Classes: 1 Completers: 7	Classes: 1 Completers: 4
Spartanburg				Classes: 1 Completers: 13
Year total	Classes: 4 Completers: 26	Classes: 5 Completers: 35	Classes: 12 Completers: 120	Classes: 16 Completers: 171
Overall Total	Classes: 37 Completers: 352			

** Completers = Participants who attended at least 2/3 of ASHC classes or at least four of the six classes.*

Appendices

Number of Completed PACE Classes by County in SC
July 1, 2000 - June 30, 2005

County	July 00-June 01	July 01-June 02	July 02-June 03	July 03-June 04	July 04-June 05	County Total
Beaufort				Classes: 2	Classes: 2	Classes: 4
Greenville					Classes: 1	Classes: 1
Orangeburg	Classes: 3	Classes: 4	Classes: 5	Classes: 4	Classes: 7	Classes: 23
Richland					Classes: 1	Classes: 1
York			Classes: 1	Classes: 1	Classes: 1	Classes: 3
Year total	Classes: 3	Classes: 4	Classes: 6	Classes: 7	Classes: 12	
Overall Total	Classes: 32					

Note - For ongoing classes, each quarter is counted as one class

PACE and ASHC Instructor Training in SC July 1, 2000 - June 30,2005						
Program	July00-June01	July01-June02	July 02-June 03	July 03-June04	July04-June 05	Program Total
ASHC Train the Trainer			6/26/03; Participants: 3			3
ASHC Instructor Training	10/13-0/14/00 (Fibro); Participants: 13		4/25-4/26/02; Participants:15. 6/27-6/28/03; Participants: 5 (2 repeat)	6/10 - 6/11/04; Participants: 10	12/14/04;* Participants: 5* 5/19 - 5/20/05; Participants: 9	50
PACE Train the Trainer				1/8/04; Participants 3		3
PACE Instructor Training			8/16-8/17/02; Participants: 8	1/9/04; Participants: 16	12/14/04;* Participants:6* 10/15/04; Participants: 15; 4/29/05; Participants: 16; 6/16/05; Participants: 9	64
Year total	13	0	29	29	49	
** Those who attended the training had already been trained, but received information on the revised course materials. Numbers are not included in the total*						

Appendices

Active Arthritis Self-Help Course Programs and Instructors in SC
June 30, 2005

Anderson	DHEC Public Health, Region I 200 Booker Drive Wahalla, SC 29691-2278 (803) 541-1191	Kathleen Pursley
Bamberg	DHEC Public Health, Region V 1550 Carolina St. Orangeburg, SC 26116 (803) 533-7272 (803) 874-4113	Beulah Hand Delores Zeigler
Charleston	Low Country Senior Center 865 Riverland Drive James Island Charleston, SC 29412 (843) 762-9555	Elizabeth Bernat
Chesterfield	DHEC Public Health Region IV 203 North Page Street Chesterfield, SC 29709 (843) 623-2206	Jack Rhyne
Darlington	CareSouth Carolina Society Hill, SC (843) 378-4508 (843) 378-4502	Liz Kershner, Joanne Irvin, Pat Graham
Horry	DHEC Public Health Region VI Conway Home Health Services 2903-A 4th Ave. Conway, SC 29527 (843) 248-5850	Richard Hyland, Beth McMillan

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Kershaw	DHEC Public Health Region IV 105 N. Magnolia St Sumter, SC 29150 (803) 773-5511	Pam Smith
Lee	CareSouth Carolina 545 Sumter Highway Bishopville, SC 9010 (803) 484-5317	Mary Mitchell
Lexington	DHEC Public Health, Region III Lexington County Health Dept 112 West Hospital Dr Lexington, SC (803) 791-3580	Linda Hulme
Marlboro	CareSouth Carolina, Bennettsville 999 Cheraw St Bennettsville, SC (843) 479-6104	Lorraine Wright
	CareSouth Carolina, McColl 225 South Main Street McColl, SC 29570 (843) 523-5751 (843) 479-2341	Millie Grooms Kathy Hunter
Oconee	DHEC Public Health Region I 200 Booker Drive Wahalla, SC 29691-2278 (803) 541-1191	*Kathleen Pursley

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Orangeburg	DHEC Public Health Region V 1550 Carolina St. Orangeburg, SC 26116 (803) 533-7272	*Beulah Hand
Richland	DHEC Public Health Region III 200 Hampton St. Columbia, SC 29204 (803) 576-2891	Terry Green
Spartanburg	DHEC Public Health Region II 1000 North Pine Street Spartanburg, SC 29303 (864) 596-3551 (800) 244-7164	Beth Henson
Total 14 counties	15 programs	18 instructors

** Denotes instructor works at multiple sites and was counted previously.*

Active = Programs that have offered a class within the past year, have one in progress, or have one scheduled

Appendices

Active PACE Programs and Instructors in SC
June 30, 2005

County	Site	Instructor
Bamberg	SC PACE Project Rome Baptist Church 544 Mimosa Street Denmark, SC 29042 (803) 793-4537	Barbara Beard
	SC PACE Sr. Project Bamberg County Office On Aging 498 Logbranch Rd Bamberg, SC 29003 (803) 245-3021	Beth Pregnall, *Ida Brantley, *Beulah Hand, *Joel Hand
	SC PACE Sr. Project Union Baptist Church Highway 301 Ehrhardt SC 29081 (803) 267-6275	Sandra Odom, Nancy Jones
Beaufort	Low Country AF (sites vary) Hilton Head, SC (843) 686-7399 (843) 342-2989 ex122	Bob Augustine, Lois Burkins, Denny Tomlin
Dillon	CareSouth Carolina 103 Kemper St Lakeview, SC 29565 (843) 759-2189	Pat Graham, Liz Kershner

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Marion	SC PACE Senior Project Bethel AME Church 7113 Hwy 908 Britton's Neck, SC 29546 (843) 362-0000	Mamie Lee Howell *Sherry Johnson
	SC PACE Sr. Project Pleasant Grove Missionary Baptist Church 1333 Penderboro Road Marion, SC 29571 (843) 423-6018	Davin Hamilton, Catherine Lester
Marlboro	CareSouth Carolina 25 South Main Street McColl, SC 29570 (843) 523-5751	Millie Grooms
	CareSouth Carolina 999 Cheraw St Bennettsville, SC 29512 (843) 479-2341	Loraine Wright
Orangeburg	TRMC HealthPlex 3000 Saint Matthews Road Orangeburg, SC 29118 (803) 395-2804 (803) 395-4388	Jennifer Ahlin, Trever Raysor, Tabitha Quick
	TRMC HealthPlex 111 John Lawson Drive Santee, SC 29142 (803) 268-2090	Kendrick Glover

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Richland	Capital Sr. Center 1650 Park Circle Columbia, SC 29201 (803) 779-1971	Reshia Wilson
York	Rock Hill YMCA 402 Charlotte Ave Rock Hill, SC 29730 (803) 329-9622	Sylvia Ayer, Lu Reeves
Total 8 Counties	13 PACE Sites	21 instructors and 4 back-up instructors

**Denotes back-up instructors and are not calculated in total number of active instructors.*

Active = Programs that have offered a class within the past year, have one in progress, or have one scheduled

Appendices

Arthritis Foundation Aquatic Programs in South Carolina
June 30, 2005

County	Site
Anderson	Anderson YMCA 201 East Reed Rd. Anderson, SC 29621 (803) 716-6265
Charleston	Remley's Point REC Center Town of Recreation 363 6th Avenue Mount Pleasant, SC 29464 (843) 849-2059
Florence	Florence Family YMCA 1700 Rutherford Drive Florence, SC 29501 (843) 665-1234

Georgetown	Beachside Health and Fitness Center Pawley's Island, SC 29585 (843) 237-3000 Ext: 5572 or (843) 235-5541
Greenville	Cleveland Street YMCA 721 Cleveland St. Greenville, SC 29601 (864) 242-4651
	Eastside Family YMCA 1250 Taylors Road Taylors, SC 29687 (864) 292-2790
	Golden Strip YMCA 100 Adams Mill Road Simpsonville, SC 29681 (864) 963-3605
	Greenville Memorial Hospital, Life Center 877 West Faris Road Greenville, SC 29605 (864) 467-3660
Greenwood	Greenwood Family YMCA, Healthy Families 123 Bailey Circle Greenwood, SC 29646 (864) 223-6298

Horry	Atlantic Physical Therapy and Rehabilitation Center, Inc. 3650 Coalition Drive Myrtle Beach, SC 29588 (843) 293-7713
	Conway Hospital Wellness and Fitness Center 2369 Cypress Circle Conway, SC 29526 (843) 347-1515
	Pepper Geddings Recreational Center 3205 Oak Street Myrtle Beach, SC 29577 (843) 918-2280
Laurens	Laurens Family YMCA 410 Anderson Dr. Laurens SC 29360 (864) 984-2626
Pickens	Pickens County YMCA 201 Burns Road Easley, SC 29640 (864) 878-8380
Richland	Harbison Recreation Center 106 Hillpine Road Columbia, SC 29212 (803) 781-2281

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Spartanburg	YMCA of Greater Spartanburg 266 South Pine Street Spartanburg, SC 29302 (864) 585-0306
	YMCA Middle Tyger 720 Shoals Road Duncan, SC 29334 (864) 433-9623
Sumter	Sumter Family YMCA 50 Willow Drive Sumter, SC 29150 Peggy Kubala (803) 773-1404
York	YMCA Rock Hill Branch 402 Charlotte Avenue Rock Hill, SC 29730 (803) 329-9622
Total	19

Appendices

Support Groups in South Carolina for Arthritis, Fibromyalgia, and Lupus

June 30, 2005

County	Group
Anderson	Arthritis Support Group Senior Solutions 403 Jefferson Avenue Contact: Betty Burns (864) 332-5381 bburns@seniorsolutions-sc.org Meets every 4th Friday at 11:00 am
Beaufort	Arthritis Support Group Arthritis Foundation, Low Country Region Hilton Head Regional Medical Center Lamott Building Classroom Facilitator Danielle D. Haynes RN, MOA Contact: Joyce Gilles (843) 686-7399 2:00-3:00 pm Meets every 2nd Thursday
Charleston	Lupus Support Group For Information, Contact: Lupus Foundation of America, Inc. South Carolina Chapter PO Box 1427 Easley, SC 29641 Phone: (864) 855-2400

Appendices

Florence	**Arthritis Support Group** **Carolina House** **3117 West Palmetto Street** **Florence, SC 29501** **Contact: Vivian Moody** **(843) 393-7256** **Meets every last Monday of the month at 3:30 pm**
	Chronic Pain & Fibromyalgia Group **The Rehabilitation Center of Carolinas Hospital System** **1925 Hoffmeyer Road** **Florence, SC 29501** **(843) 661-4360** **Meets every 3rd Tuesday at 5:00 pm**
	Fibromyalgia Support Group **McLeod Pavillion** **5th floor** **555 East Cheves Street** **Florence, SC 29506** **(843) 777-8100**
Greenville	**Lupus Support Group** **American Red Cross Building** **940 Grove Road** **Simpsonville, SC** **(864) 859-8929** **Meets every 3rd Sunday at 2:30 pm**

Greenville cont.	**Arthritis Support Group** **Senior Action** **402 East McBee Avenue** **Contact: Amy Price (864) 467-3660** **Meets every 4th Thursday at 11:00 am**
	Fibromyalgia Support Group: **St. Francis Hospital** **3rd floor, Bernadine Center** **Greenville, SC 29601** **(864) 243-0481** **Meets every 3rdThursday at 6:00 pm**
	Lupus Support Group **Lupus Foundation of America, South Carolina Chapter** **PO Box 1427** **Easley, SC 29641** **(864) 855-2400**
Kershaw	**Lupus Support Group** **Health Resource Center** **124 Battleship Road** **Camden, SC** **(803) 424-0461** **Meets every 4th Thursday at 6:00 pm**
Orangeburg	**Fibromyalgia Support Group** **The Regional Medical Center (TRMC)** **Rehabilitation Service Department** **First Floor (Across from the Emergency Department)** **1345 Grove Park NE** **Orangeburg, SC 29115** **(803) 533-2298** **Meets every 1st Tuesday at 6:00 pm**

Pickens	Lupus Support Group Lupus Foundation of America, South Carolina Chapter PO Box 1427 Easley, SC 29641 (864) 855-2400
Richland	Fibromyalgia and Chronic Fatigue Support Group Wellspring Resource Center Contact: Cora Plass (803) 765-1510 Meets every 3rd Sunday at 3:00 pm
	Fibromyalgia Support Group Getting Well Support Group (803) 787-4488 Meets every 1st Thursday at 2:00 pm
	Fibromyalgia Support Group Schafer Clinic 1410 Blanding Street, Suite 203 Columbia, SC 29201 Contact: Virginia Schafer (803) 939-0711 Meets every 2nd Tuesday at 7:00 pm at the Red Cross Bldg.
Spartanburg	Fibromyalgia Support Group Foothills Fibromyalgia /Chronic Fatigue Syndrome Support Network Spartanburg, SC (864) 583-5803 Gibbs Regional Cancer Center (Part of Spartanburg Regional Medical Hospital) For info call: Cancer Learning Center at (877) 455-7747 Meets every 4th Tuesday at 6:30 pm

Sumter	**Connective Tissue Disease Support Group** **Contact: Annette Briggs** **(803) 773-0869** **Meets every 1st Monday at 7:00 pm**
York	**Lupus Support Group** **Piedmont Healthcare System Hospital Doctor's Dining Room** **222 South Herlong Ave.** **Rock Hill, South Carolina** **(803) 329-1234** **Meets every 3rd Sunday at 3:00 pm**
Total	**19**

Appendices

State and Regional Arthritis Resources

Arthritis Foundation
Carolinas Chapter
200 East Woodlawn Road
Suite 156
Charlotte, NC 28217
Phone: (704) 529-5064 or (800) 883-8806 (toll free)
Fax: (704) 529-0626
http://www.arthritis.org

Arthritis Foundation
Low County Region
P.O. Box 21312
Hilton Head, SC 29925
Phone: (843) 686-7399
Fax: (843) 686-6399

Lupus Foundation of America, Inc.
South Carolina Chapter
P.O. Box 1427
Easley, SC 29641
Phone: (864) 855-2400
http://www.midnet.sc.edu/lupus

SC DHEC
Arthritis Prevention & Control Program
PO Box 101106
Columbia, SC 29211
Phone: (803) 898-0760 or (800) 868-0404 (toll free)
http://www.scdhec.gov/arthritis

Appendices

Rheumatologists in South Carolina
2005

County	Physician
Aiken	Martinez De Andino, Edward 410 University Parkway, Suite 1400 Aiken, SC 29801 (803) 649-3333
Anderson	Foothills Rheumatology Agha, Amir M. 2000 East Greenville St Suite 2550 Anderson, SC 29621 (864) 716-6030
Beaufort	Gilkeson, Gary 300 Midtown Dr, Suite 314 Beaufort, SC 29902 (also at MUSC) (843) 792-9200 Oats, Jim C. Low Country Medical Group 300 Midtown Drive Beaufort, SC 29906 (843) 770-0404 Arthritis Treatment Center of the Low Country Brittis, John 23 Plantation Park Drive, Suite 101 Bluffton, SC 29910 (843) 815-6555

Charleston	**Rheumatology Associates** **Carlysle Barfield, Alan I. Nussbaum, & Georgia C. Roane** **14 East Farmfield Ave.** **Charleston, SC 29407** **(843) 571-6067**
	Low Country Rheumatology **William Edwards, Gary E. Fink, Clarence W. Legerton III, Gregory Neimer** **2860 Tricon Street, Suite A** **Charleston, SC 29406** **(843) 572-4840**
	Low Country Rheumatology **Edwards, William M. &** **Sheldon, William B.** **9279 Medical Plaza Dr, Suite C** **North Charleston, SC 29406** **(843) 797-1008**

Charleston cont.	MUSC Rheumatology Division 96 Jonathan Lucas St Suite 912 PO Box 250623 Charleston SC 29425 West Ashley Office: 2125 Charley Hall Blvd Charleston, SC 29414 (843) 876-0593 Bolster, Marcy; Brown, Alan; Gilkeson, Gary (also in Beaufort); Mitchell, Holly Oates, Jim; Silver, Richard; Smith, Edwin;
	Walter M. Bonner, Frank E. Harper, and J. Grant Taylor 890 Johnnie Dodds Blvd, Suite 2A Mount Pleasant, SC 29464 (843) 881- 9971
Chester	Carolina Bone & Joint Clinic Dayal, Ashrito 1228 Colonial Commons Lancaster, SC 29720 (803) 289-2663

Florence	Carolina Health Care Patel, Supen R. Turner, Robert E. III 506 E. Cheves Street, Suite 202 Florence, SC 29505 (843) 667-0816
	Pee Dee Internal Medicine Docherty, Jon H. 514 South Dargan St, Suite G (PO Box 2598) Florence, SC 29503 (843) 667-8561

Greenville	**Foothills Rheumatology** **Agha, Amir M.** **1350 Cleveland Street** **Greenville, SC 29607** **(864) 298-8010** **(also in Anderson)**
	Meadows, Deborah **205 Enterprise Blvd, Suite 160** **Greenville, SC 29615** **(864) 297-0080**
	Woodward Medical Center **Stephen C. Ruffin** **21 Aberdeen Dr. (Box 9078)** **Greenville SC 29604** **(864) 242-4122**
	Piedmont Arthritis **Hill, Geneva L., Johnson, Josette J., Lawson, Jeffery G. and** **Lipsey, Allison Sentelle** **Greenville, SC 29601** **(864) 235-8396**
Greenwood	**Hicks, John T.** **303 W. Alexander** **(PO Box 427 29648)** **Greenwood, SC 29646** **(864) 953-8002**

Horry	**Lee, Wendy W. and** **Melissa J. Terchek** **Medical Arts Building** **2376 Cypress Cr.,** **Conway, SC 29526** **(843) 234-0821** **and** **Seacoast Medical Center** **Hwy. 9 East, Suite 255** **Little River, SC 29563** **(843) 390-0877** **and** **909 Medical Circle** **Myrtle Beach, SC 29572** **(843) 692-0968**
	Conway, Douglas **945 82nd Parkway, Medical Plaza** **Myrtle Beach, SC 29577** **(843) 497-5929**
	Stephen G. Gelfand **3516 Caduceus Dr.** **Myrtle Beach, SC 29588** **(843) 293-1022** **and** **4237 River Hills Dr., Suite 110** **Little River, SC 29566** **(843) 293-1022**

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Lancaster	**Carolina Bone & Joint Clinic** **Dayal, Ashrito** **1228 Colonial Commons** **Lancaster, SC 29720** **(803) 289-2663**
Lexington	**Klett, Nicole** **Lexington Hospital** **110 East Medical Lane** **Lexington, SC** **(803) 936-8900**
Orangeburg	**Feinman, Mitchell C .** **1768 Village Park Drive** **Orangeburg, SC 29118** **(803) 539-2224**

Richland	**USC School of Medicine, Resident Clinic** **Hoppmann, Richard A.** **1801 Sunset Blvd.** **Columbia, SC 29203** **(803) 434-4152**
	Dorn VA Hospital **(Veterans who qualify for VA Hospital services)** **Reid, Rodney R.** **6439 Garners Ferry Road** **Columbia, SC 29209** **(803) 776-4800**
	Arthritis Consultants **Boyd, Robert E. and Brabham, A. McKay** **3 Richland Medical Park** **Suite 240** **Columbia, SC 29203** **(803) 765-1550**
	USC School of Medicine **Fant, James W. Jr.** **2 Richland Medical Park, Suite 506** **Columbia, SC 29203** **(803) 540-1000**
	Columbia Arthritis Center **Collins, Ronald L. and Flint, Kathleen P.** **1711 St. Julian Place** **Columbia, SC 29204** **(803) 799-0911**

Spartanburg	**Dorlon, Robert E.** **391 Serpentine Dr, Suite 240** **Spartanburg, SC 29303** **(864) 542-1058**
	Holt, David A. **100 East Wood St, Suite 302** **Spartanburg, SC 29303** **(864) 560-6844** **also, Hospital Clinic** **101 E. Wood St, 4 East** **Spartanburg, SC 29303** **(864) 560-6806**
Sumter	**Shaw Air Force Base** **Des Rosier, Kenneth F.** **20th Medical Group** **(active and retired military)** **431 Meadowlark St** **Shaw AFB, SC 29152** **(803) 895-2006**
York	**Carolina Center for Rheumatology** **Burack, David and Wilson, James M.** **1665 Herlong Ct., Suite A** **Rock Hill, SC 29732** **(803) 329-1660**

Notes

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D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

South Carolina Arthritis Prevention and Control Program
South Carolina Department of Health and Environmental Control
Mills Jarrett Complex
Box 101106
Columbia, SC 29211
(803) 898-0760

www.scdhec.gov/arthritis

CR-003748 8/06